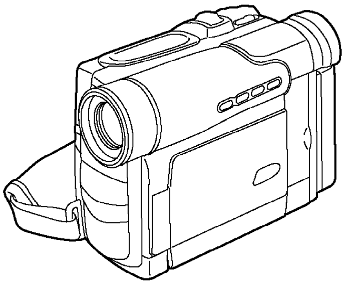
ORDER NO. VM0301006C8

Service Manual

Digital Video Camcorder

NV-DS60EG NV-DS60EGE

NV-DS60EGM NV-DS60B / NV-DS60EN NV-DS60ENT / NV-DS60ENC
NV-DS60A / NV-DS65EG NV-DS65EGE / NV-DS65EGM NV-DS65B / NV
-DS65EN NV-DS65ENT / NV-DS65ENC NV-DS65A
Vol. 1
Colours
(S)...................Silver Type



SPECIFICATIONS

ITEM	SPECIFICATION	1	2	3	4
Power Source	Digital Video Camera: DC 7.9/7.2V AC Adaptor: AC 100-240 V, 50/60 Hz	○	○	○	○
Power Consumption	Digital Video Camera: Recording: 2.6 W (When using viewfinder)	○	–	–	–
	2.8 W (When using viewfinder)	–	○	–	–
	3.0 W (When using viewfinder)	–	–	○	–
	3.2 W (When using viewfinder)	–	–	–	○
	4.0 W (When using LCD Monitor)	○	–	–	–
	4.2 W (When using LCD Monitor)	–	○	–	–
	4.4 W (When using LCD Monitor)	–	–	○	–
	4.6 W (When using LCD Monitor)	–	–	–	○
	AC Adaptor: 20 W DC Output: DC 7.9 V, 9 W (Movie Camera Operation) DC 8.4 V, 1.2 A (Battery Charging)	○	○	○	○
Recording Format	Mini DV (Consumer-use Digital Video SD Format)	○	○	○	○
Tape Used	6.35 mm digital video tape	○	○	○	○
Recording /Playback Time	SP: 80 min. (with DVM80) LP: 120min. (with DVM80)	○	○	○	○
Video Recording System	Digital Component	○	○	○	○
Television System	CCIR: 625 lines, 50 fields PAL colour signal	○	○	○	○
Audio Recording System	PCM Digital Recording: 16 bit (48 kHz/2ch) 12 bit (32 kHz/4ch)	○	○	○	○
Image Sensor	1/6-inch CCD Image Sensor	○	○	○	○
Lens	10 : 1 Power Zoom, Auto Iris, F1.8, Macro (Full Range AF) Focal Length: 2.3-23 mm Filter Diameter: 27 mm	○	○	○	○
Monitor	2.5-inch LCD Monitor	○	○	○	○
Viewfinder	Electronic Viewfinder	○	○	○	○
Standard Illumination	2,000 lx	○	○	○	○
Minimum Required Illumination	2 lx (Colour Night View Function)	○	○	○	○
Output Level	Video Output Level: 1.0 Vp-p, 75 ohm S-Video Output Level: Y Output: 1.0 Vp-p, 75 ohm C Output: 0.3 Vp-p, 75 ohm Audio Output Level (Line): 316 mV, 600 ohm	○	○	○	○
Input Level	Video Input Level: 1.0 Vp-p, 75 ohm S-Video Input Level: Y Input: 1.0 Vp-p, 75 ohm C Input: 0.3 Vp-p, 75 ohm Audio Input Level (Line): 316 mV, 10 kohm or more	–	○	–	○
Mic Input	Mic sensitivity -50 dB (0 dB=1 V/Pa, 1 kHz) (Stereo mini jack)	○	○	○	○
Digital Still Picture	Digital Still Picture Output, Control Signal Output	○	–	–	–
	Digital Still Picture Output, Control Signal Input/Output	–	○	–	–
Digital Interface	DV Output Terminal (IEEE1394, 4-pin)	○	–	–	–
	DV Input/Output Terminal (IEEE1394, 4-pin)	–	○	○	○
USB	Card reader/writer function, USB 2.0 compliant (max. 12 Mbps)	–	–	○	○
Card Memory Function	Recording Media: MultiMediaCard, SD Memory Card Image Compression:JPEG	–	–	○	○
Microphone	Stereo	○	○	○	○
Speaker	1 round speaker ∅ 20 mm	○	○	○	○
Operating Temperature	0 °C-40 °C	○	○	○	○
Operating Humidity	10 %-80 %	○	○	○	○
Weight	440 g (without Battery and DV cassette)	○	○	○	○
Dimensions	66 mm x 87 mm x 123 mm (W x H x D)	○	○	○	○
Solder	This model uses lead free solder (PbF).	○	○	○	○

1. NV-DS60EG/ NV-DS60EGE/ NV-DS60EGM/ NV-DS60B
2. NV-DS60EN/ NV-DS60ENT/ NV-DS60ENC/ NV-DS60A
3. NV-DS65EG/ NV-DS65EGE/ NV-DS65EGM/ NV-DS65B
4. NV-DS65EN/ NV-DS65ENT/ NV-DS65ENC/ NV-DS65A

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

1. INTRODUCTION

1.1. INTRODUCTION

This service manual contains technical information which will allow service personnel's to understand and service this model. Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

Note 1:

These movie cameras use AC Adaptor is DE-855AB.
This AC Adaptor is supplied only as a unit.

Note 2:

1. This service manual does not contain the following information, because of the impossibility of servicing at component level.

A. Schematic Diagram, Block Diagram and C.B.A. layout of Main C.B.A.

B. Parts List for individual parts of Main C.B.A.

2. The following category is recycle module part. Please send it to Central Repair Center.

A. *Main C.B.A. (LSEP8214P1/ LSEP8214Q1/ LSEP8226P1/ LSEP8226Q1)

When a part replacement is required for repairing each Main C.B.A., replace the assembly parts.

1.2. CAUTION FOR AC CORD / (VJA0940 TYPE)

1.2.1. INFORMATION FOR YOUR SAFETY

IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

1.3. CAUTION FOR AC MAINS LEAD

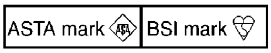
For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362.

Check for the ASRA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safety.

There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt, please consult a qualified electrician.

1.3.1. Important

The wires in this mains lead are coloured in accordance with the following code:

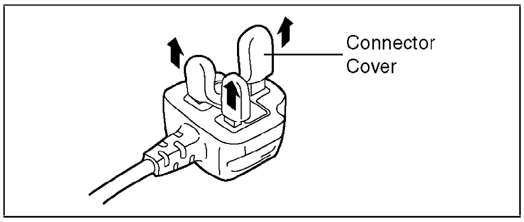
Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.
Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.

Earth Symbol	⏚

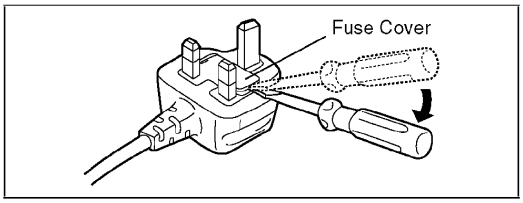
1.3.2. Before use

remove the Connector Cover as follows.

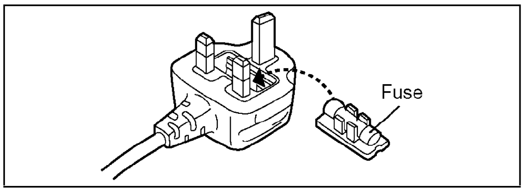


1.3.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the fuse and attach the Fuse cover.



2. SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts

should be replaced with manufacturer’s specified parts to prevent, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

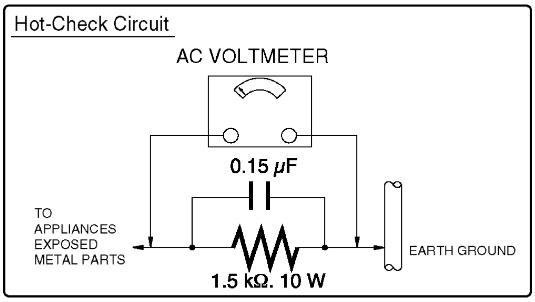
1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

LEAKAGE CURRENT HOT CHECK
(See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.

3. **Use an AC voltmeter, with 1 kΩ /V or more sensitivity, to measure the potential across the resistor.**
4. **Check each exposed metallic part, and measure the voltage at each point.**
5. **Reverse the AC plug in the AC outlet and repeat each of the above measurements.**
6. **The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.**

Figure. 1



3. PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. **Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.**
2. **After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum**

foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. **Use only a grounded-tip soldering iron to solder or unsolder ES devices.**
4. **Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.**
5. **Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.**
6. **Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).**
7. **Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.**
   CAUTION :
   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. **Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).**

4. ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:
PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50-70°F (30-40°C) higher. Please use a high temperature soldering iron. In case of the

soldering iron with temperature control, please set it to 700±20°F (370±10°C).

- Pb free solder will tend to splash when heated too high (about 1100°F/600°C).

When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

5. OPERATION GUIDE

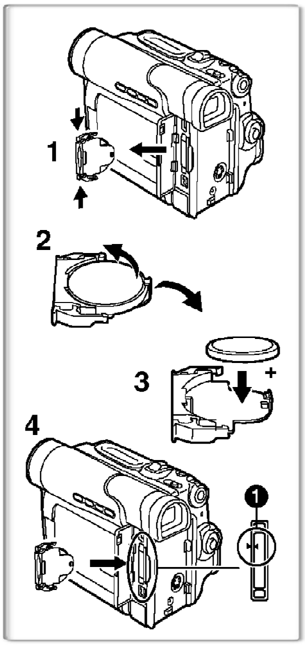
6. HOW TO REPLACE THE LITHIUM BATTERY

Replacing Clock Battery

The clock battery is pre-installed. Follow the steps below if replacement becomes necessary.

1. **While pinching the 2 tabs, pull Battery Tray out.**
2. **Bend middle tab out and remove Battery.**
3. **Snap new Battery (+ mark down) into Battery Tray.**
   - Do not reverse the polarity.
4. **Insert Battery Tray so the triangle marks ❶ meet.**

- Set the [VCR/OFF/CAMERA/M-CARD] Switch to [OFF] or disconnect the Movie Camera from a power source when replacing the clock battery.
- The life of the battery is about 5 years.
- Keep the button-type battery out of the reach of children.
- Make sure to match the poles correctly when inserting the battery.



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CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

……

WARNING

Risk of fire, explosion and burns. Do not recharge, disassemble, heat above 100°C or incinerate. Keep the Button-Type battery out of the reach of children. Never put Button-Type battery in mouth. If swallowed call your doctor.

……

NOTE:

This Lithium battery is a critical component. (Type No.: CR2025)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other

purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacture's instructions.

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.
Verbrauchte Battrien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattilverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning má kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tibage til leverandøren.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

7. HOW TO RECYCLE THE LITHIUM BATTERY

RECYCLE
RBRC
Li-ion
TM
1.800.822.8837

A lithium ion/polymer battey that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

8. SERVICE NOTES (PLEASE READ)

8.1. SERVICE NOTES

8.1.1. EXTENSION CABLES FOR SERVICE POSITION

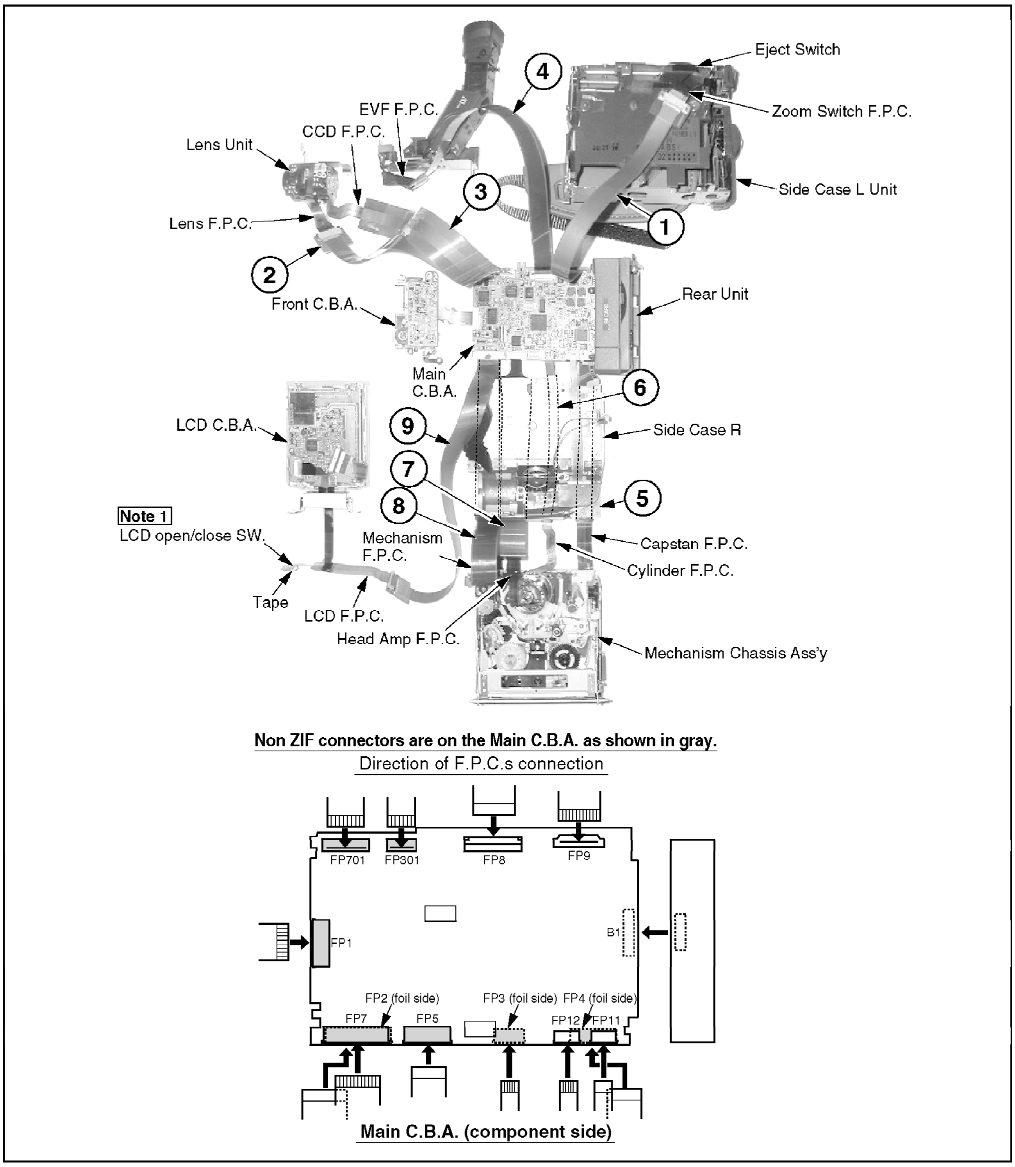
Using the following Extension Cables, place the unit as shown for check and service.

NO.	PART NUMBER	PART NAME	CONNECTION
①	LSUA0020	20Pin Extension Cable	FP9 on Main C.B.A. ~ Zoom Switch F.P.C. of Side Case L Unit
②	LSUA0020	20Pin Extension Cable	FP701 on Main C.B.A. ~ Lens F.P.C. on Lens Unit
③	VFKW0124A	14Pin Extension Cable	FP301 on Main C.B.A. ~ CCD F.P.C. on Lens Unit
④	VUVS0012	22Pin Extension Cable	FP8 on Main C.B.A. ~ EVF F.P.C. of EVF Unit
⑤	LSUA0017	18Pin Extension Cable	FP4 on Main C.B.A. ~ Capstan F.P.C. on Mechanism Chassis Ass'y
⑥	LSUA0016	10Pin Extension Cable	FP3 on Main C.B.A. ~ Cylinder F.P.C. on Mechanism Chassis Ass'y
⑦	VUVS0007	12Pin Extension Cable	FP5 on Main C.B.A. ~ Head Amp F.P.C. on Mechanism Chassis Ass'y
⑧	VUVS0015	28Pin Extension Cable	FP2 on Main C.B.A. ~ Mechanism F.P.C. on Mechanism Chassis Ass'y
⑨	VUVS0015	28Pin Extension Cable	FP7 on Main C.B.A. ~ LCD F.P.C. of Shaft Case Unit

Note :

1. **The LCD open/close SW. is for changing between LCD Display or EVF Display. When turning on LCD Display, place some paper or tape, etc. on LCD open/close SW. so that this SW. stays ON.**
2. **Connect the F.P.C.s to the connectors, verifying the direction of F.P.C. as shown.**
3. **Use a grounded ESD wrist strap while disassembling the Lens portion.**
4. **Use extreme care when unplugging or plugging in connectors.**

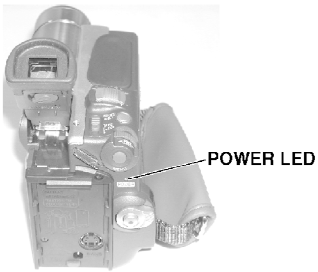
Fig. 1

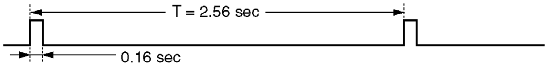
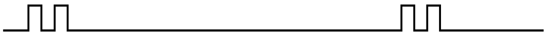
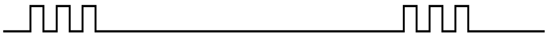
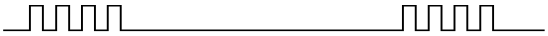
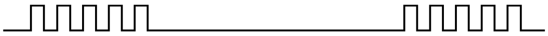

Eject Switch
Zoom Switch F.P.C.
Side Case L Unit
EVF F.P.C.
CCD F.P.C.
Lens Unit
Lens F.P.C.
Front C.B.A.
Main C.B.A.
Rear Unit
LCD C.B.A.
Side Case R
Note 1
LCD open/close SW.
Tape
LCD F.P.C.
Head Amp F.P.C.
Mechanism F.P.C.
Capstan F.P.C.
Cylinder F.P.C.
Mechanism Chassis Ass'y
1
2
3
4
5
6
7
8
9
Non ZIF connectors are on the Main C.B.A. as shown in gray.
Direction of F.P.C.s connection
FP701
FP301
FP8
FP9
FP1
B1
FP2 (foil side)
FP3 (foil side)
FP4 (foil side)
FP7
FP5
FP12
FP11
Main C.B.A. (component side)

8.1.2. SIMPLIFIED FAULT FINDING DATA (SELF-DIAGNOSTIC SYSTEM)

When following conditions occur, the Power LED will flash according to the condition.

Fig. 2-1



CONDITION	POWER LED FLASHING TIMING & POWER OFF TIMING
T-Reel Lock	After 1 minute flash, power will be turned off. 
S-Reel Lock	After 1 minute flash, power will be turned off. 
Unloading Lock	After 1 minute flash, power will be turned off. 
Loading Lock	After 1 minute flash, power will be turned off. 
Cylinder Lock	After 1 minute flash, power will be turned off. 
Focus Motor Lock	Power LED flashes at 1 Hz timing.
Zoom Motor Lock	Power LED flashes at 1 Hz timing.
Dew Detection	After 18 seconds flash at 1 Hz timing, power will be turned off.

(For model with SD/MMC Slot)

If any of the following numbers appear on-screen, the palmcorder may need service. Do not remove the battery (if attached) and write down the displayed number.

Fig. 2-2

Error No.	Error Description
U11	Card Error
U12	Card Error
U14	Card/Camcorder Dialogue Error
U15	Card Access Error
U16	Card Access Error
U30	Error other than above

Note:

While battery remains, the Error No. will be displayed again when the power is switched off and on again. (Once the Battery is removed or dead, Error No. will not remain in the memory.)

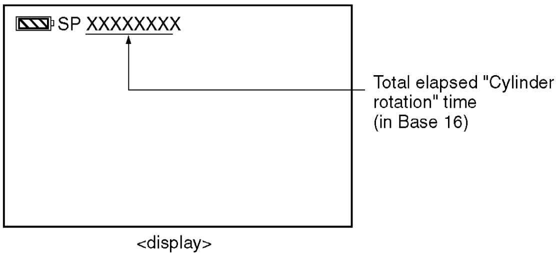
Refer to “TROUBLESHOOTING HINTS.”

8.1.3. CYLINDER ELAPSED TIME OSD

This function displays total elapsed “Cylinder rotation” time on the OSD.

1. **With the power turned on, set the camcorder to CAMERA mode.**
2. **Press and hold STOP and REC buttons together for 5 seconds.**

Fig. 2-3



Calculation method of the total elapsed "Cylinder rotation" time.
For example: If "0000012D" is displayed,

0000012D (in Base 16) = 301 (in Base 10)

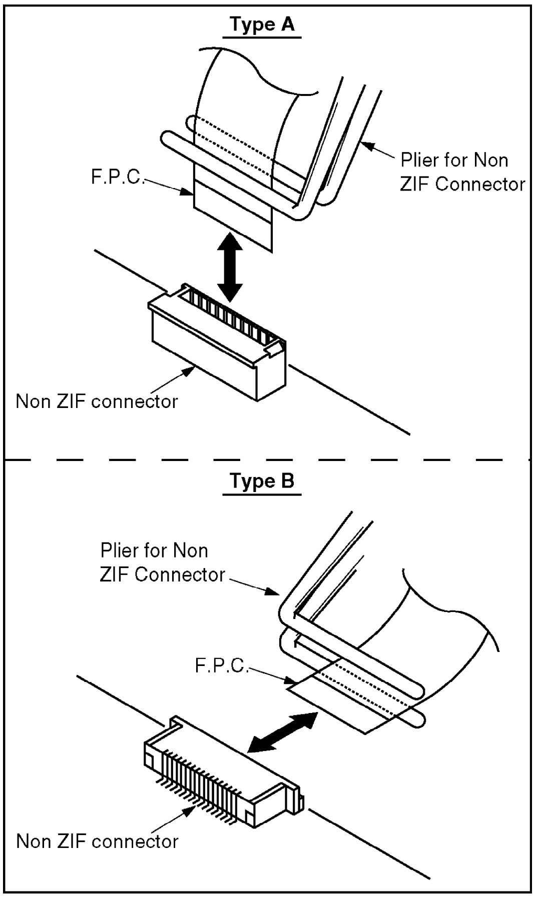
301 x $\underbrace{4.233\text{ (seconds)}}_{\textbf{fixed value}}$ = 1274.1 (seconds)
= 21.2 (minutes)

8.1.4. REMOVAL/INSTALLATION OF F.P.C. FROM NON ZIF (Zero Insertion Force) CONNECTOR

Removal/Installation of F.P.C. from the Non ZIF (Zero Insertion Force) connector:

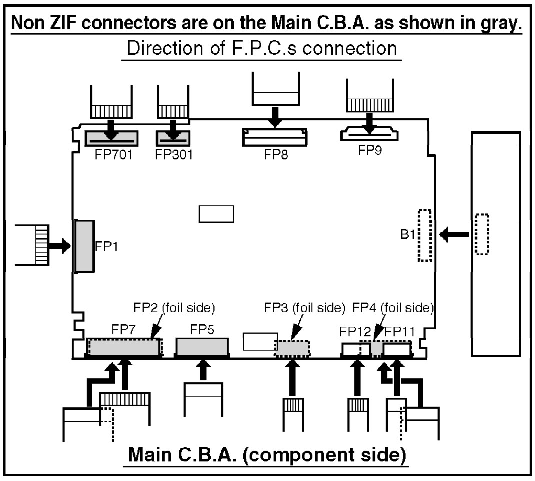
1. **The Non ZIF connectors and the ZIF connectors are used on the unit. And there are 2 types (Type A, Type B) of Non ZIF connectors.**
2. **To remove the F.P.C. from the Non ZIF connector, use the Plier for Non ZIF Connector (LSVQ0028) to pull out the F.P.C. as shown. The same Plier for Non ZIF Connector (LSVQ0028) should also be used to install the F.P.C. to the Non ZIF Connector.**

Fig. 3-1


Type A
F.P.C.
Plier for Non
ZIF Connector
Non ZIF connector
Type B
Plier for Non
ZIF Connector
F.P.C.
Non ZIF connector

3. **Connect the F.P.C.s to the Non ZIF connectors, verifying the direction of F.P.C as shown.**

Fig. 3-2


Non ZIF connectors are on the Main C.B.A. as shown in gray.
Direction of F.P.C.s connection
FP701
FP301
FP8
FP9
FP1
B1
FP2 (foil side)
FP3 (foil side)
FP4 (foil side)
FP7
FP5
FP12
FP11
Main C.B.A. (component side)

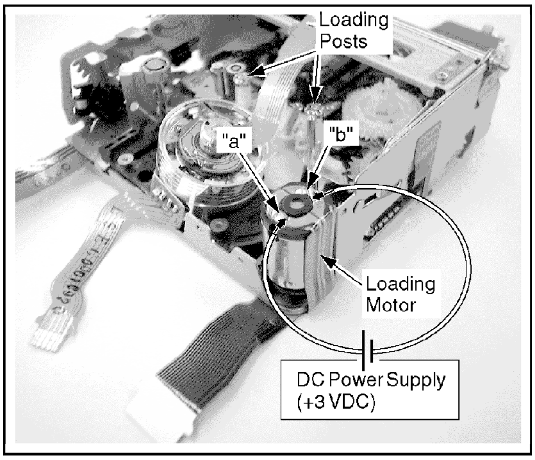
8.1.5. METHOD FOR LOADING/UNLOADING OF MECHANISM

CAUTION:

If loading does not start after DC Power Supply is applied, DO NOT continue to apply DC Power.

Apply +3 VDC Power Supply to the Loading Motor terminals.
Loading:
DC (-) to Portion "a," DC (+) to Portion "b"
Unloading:
DC (+) to Portion "a," DC (-) to Portion "b"

Fig. 4



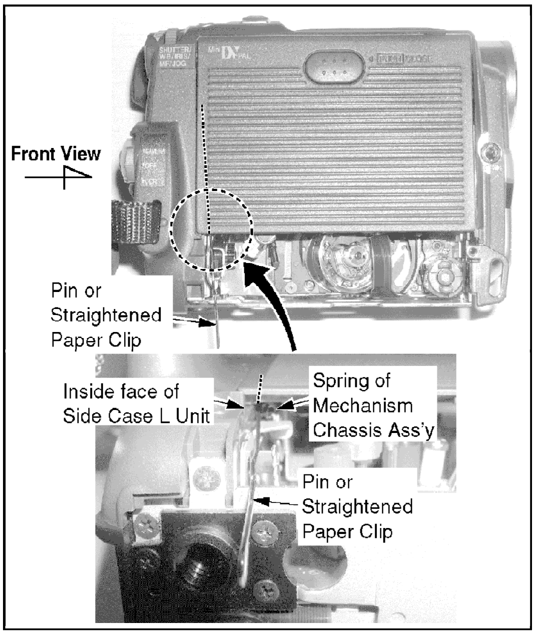
8.1.6. METHOD FOR EJECTING WITH POWER OFF

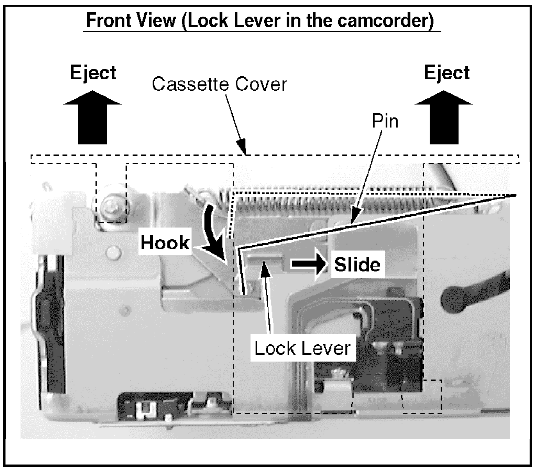
CAUTION:

Make sure that a cassette tape is not in when this method is used, or the cassette tape will be damaged. When a cassette tape is jammed, DO NOT eject manually. Refer to "How to Remove a Jammed Tape."

1. **Remove the Bottom Case. Refer to "CABINET SECTION" in DISASSEMBLY/ASSEMBLY PROCEDURES.**
2. **Insert the Pin or Straightened Paper Clip, with tip bent, into the gap between the Spring of the Mechanism Chassis Ass'y and the inside face of the Side Case L Unit.**
3. **Hook and slide the Lock Lever of the Mechanism Chassis Ass'y.**
4. **The Cassette Cover will open. (Eject)**

Fig. 5


Front View
Pin or Straightened Paper Clip
Inside face of Side Case L Unit
Spring of Mechanism Chassis Ass'y
Pin or Straightened Paper Clip


Front View (Lock Lever in the camcorder)
Eject
Cassette Cover
Eject
Pin
Hook
Slide
Lock Lever

8.1.7. HOW TO REMOVE A JAMMED TAPE

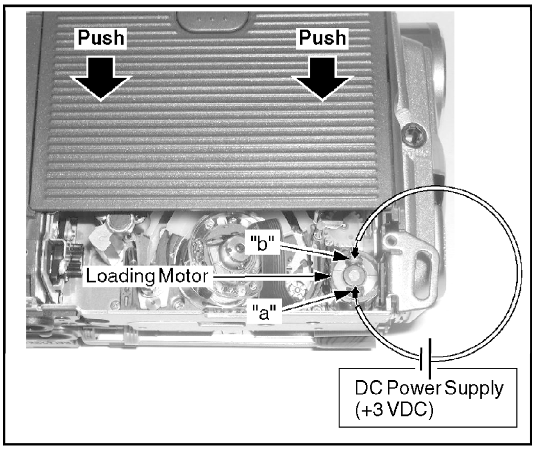
Remove a jammed tape in Electrical Method as follows:

1. **Remove the Bottom Case. Refer to "CABINET SECTION" in DISASSEMBLY/ASSEMBLY PROCEDURES.**
2. **Apply +3 V DC Power Supply to Portions "a" and "b" on the Loading Motor.**

   Note

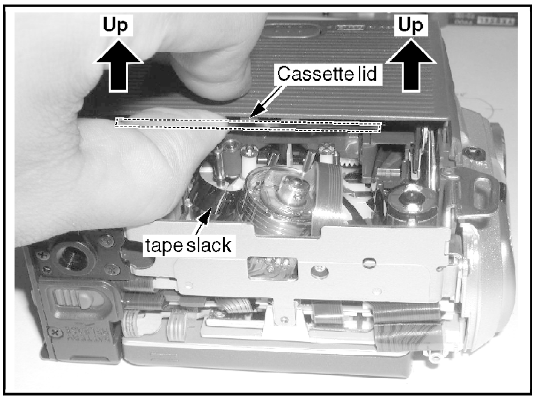
   DO NOT let the Garage Unit eject when pushing down the Cassette Cover. If the Garage Unit is in the up position, the cassette tape may be damaged.

Fig. 6-1


Push
Push
"b"
Loading Motor
"a"
DC Power Supply
(+3 VDC)

3. When the Mechanism is in EJECT position (snapping sound), cut the Power Supply immediately.
4. Up the Cassette Cover (Garage Unit) carefully fixing the cassette lid by hand so as not to damage to the tape slack.

Fig. 6-2


Up
Up
Cassette lid
tape slack

5. Take out the cassette tape from the Garage Unit carefully.
6. Remove the tape slack by rotating the Take-up Reel Gear of the cassette tape.
7. Connect the Power or Battery to set the Mechanism to STOP Position.

8.1.8. EEPROM DATA

CAUTION:

Be sure to save the EEPROM data using PC-EVR Adjustment Program before service and adjustment in order to make sure to avoid an accidental data loss, etc. using PC-EVR Adjustment Program.

Click the desired button in EEPROM data menu for saving the

EEPROM data, writting the EEPROM data which you stored in your PC to the EEPROM IC, or writing the initial data to the EEPROM IC.

EEPROM IC

C.B.A.	EEPROM IC Ref. No.
Main C.B.A.	IC6007

8.1.9. SIGNAL DESCRIPTION ON MEASURING BOARD FOR ELECTRICAL ADJUSTMENT (VFK1308E)

A signal check can be performed using the Measuring Board.

Fig. 7-1

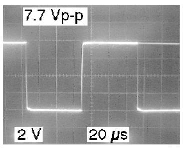
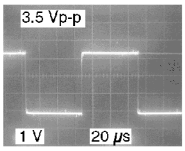
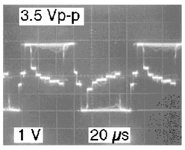
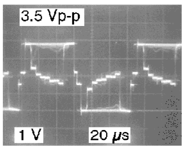
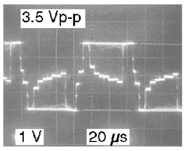
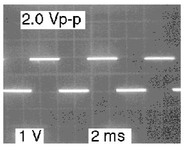
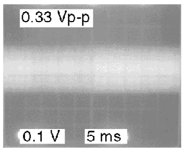
Signal Name (on board)	Description	Waveforms
E2DATA	Not used	---------------
CAM_TEST	Not used	---------------
E2CLK	Not used	---------------
EVR3V	Not used	---------------
VD	Not used	---------------
SBO	Not used	---------------
SBI	Not used	---------------
E2CS	Not used	---------------
MREF/VREF-T	Not used	---------------
AFST	Not used	---------------
UARTI	To monitor RS-232C received data	---------------
UARTO	To monitor RS-232C transmitted data	---------------
VTR_RESET	Power microcontroller reset: low	---------------
BST_TEST	Not used	---------------
TCK	Not used	---------------
TMS	Not used	---------------
TDO	Not used	---------------
TDI	Not used	---------------
MIC_CLK	MIC serial clock output from camcorder to PC	---------------
MIC_DT	MIC serial data output from camcorder to PC	---------------
MON_PLL	Not used	---------------
MON_VCOM	To monitor VCOM signal at Pin 10 of FP8002 on LCD C.B.A. This test point is used for "PLL Adjustment" and "VCOM Level Adjustment."	 Camera Mode (Color Bar Chart)
SCK	Not used	---------------
SIO	Not used	---------------
MB	Not used	---------------
D_GND	Grounding terminal	---------------
F_VSS	Not used	---------------
F_SDA	Not used	---------------

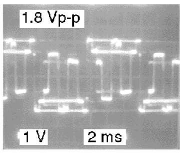
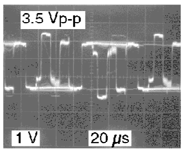
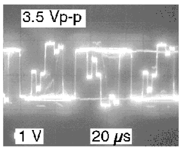
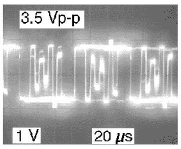
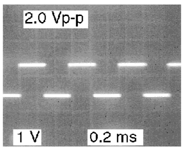
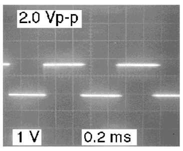
Fig. 7-2

Signal Name (on board)	Description	Waveforms
F_SCLK	Not used	---------------
F_MODE	Not used	---------------
F_VEE	Not used	---------------
VCC41	Not used	---------------
VCC9	Not used	---------------
F_VCC	Not used	---------------
F_OE	Not used	---------------
F_BUSY	Not used	---------------
MON_CR*	To monitor VCOM signal at Pin 38 of IC901 on Main C.B.A. This test point is used for "VCOM Adjustment" and "PLL Adjustment."	 Camera Mode (Color Bar Chart)
MON_CB*	To monitor EVF red signal at Pin 45 of IC901 on Main C.B.A. This test point is used for "V2(R) V3(B) Sub Contrast/Sub Brightness Adjustment."	 Camera Mode (Color Bar Chart)
MON_B*	To monitor EVF blue signal at Pin 40 of IC901 on Main C.B.A. This test point is used for "V2(R) V3(B) Sub Contrast/Sub Brightness Adjustment."	 Camera Mode (Color Bar Chart)
MON_G*	To monitor EVF green signal at Pin 43 of IC901 on Main C.B.A. This test point is used for "Black Limiter Adjustment" and "V1(G) Contrast/Brightness Adjustment."	 Camera Mode (Color Bar Chart)
HID	To monitor HID signal at Pin 44 of IC3201 on Main C.B.A. This test point is used for "PG shifter Adjustment."	 Rec/PB Mode (Color Bar Chart)
ENVELOPE	To monitor Envelope signal at Pin 41 of IC5001 on Main C.B.A.	 PB Mode (Color Bar Chart)

***Note:**

To signal check for "MON_CR," MON_CB," "MON_B" or "MON_G," rotate the LCD Monitor 180 degrees so it faces the same direction as the lens. (EVF display is ON.)

Fig. 7-3

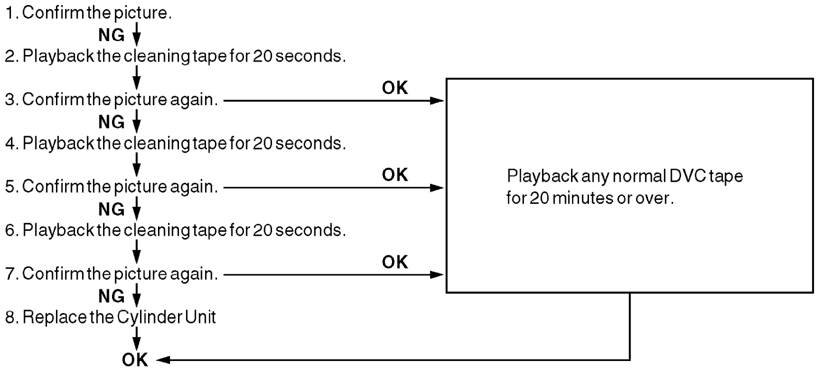
Signal Name (on board)	Description	Waveforms
RF GND	Not used	---------------
RECI	Not used	---------------
SPA	To monitor SPA signal at Pin 46 of IC3201 on Main C.B.A. This test point is used for "PG shifter Adjustment."	 PB Mode (Color Bar Chart)
ATFI	To monitor ATF signal at Pin 23 of IC3201 on Main C.B.A.	---------------
VCO	Not used	---------------
TP1	Not used	---------------
VREF_+/-	Not used	---------------
MA	Not used	---------------
CPOB	To monitor LCD red signal at Pin 8 of IC8001 on LCD C.B.A. This test point is used for "Pedestal Level Adjustment."	 Camera Mode (Color Bar Chart)
FNO	To monitor LCD green signal at Pin 6 of IC8001 on LCD C.B.A. This test point is used for "Pedestal Level Adjustment."	 Camera Mode (Color Bar Chart)
VREF_H/L	To monitor LCD blue signal at Pin 4 of IC8001 on LCD C.B.A. This test point is used for "Pedestal Level Adjustment."	 Camera Mode (Color Bar Chart)
CAM-A_GND	Not used	---------------
CDS	To monitor capstan FG signal at Pin 24 of IC2001 on Main C.B.A.	 Rec/PB Mode(SP) (Color Bar Chart)  Rec/PB Mode(LP) (Color Bar Chart)
CDS/AGC	Not used	---------------
ADIN	Not used	---------------

8.1.10. HOW TO USE THE DVC HEAD CLEANING TAPE / VFK1451

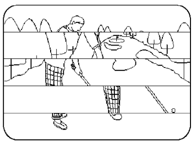
Please use the cleaning tape as described below.

Fig. 8

Note: This cleaning tape has a total playback time of 2 minutes 30 seconds. it can be used 30 times.


1. Confirm the picture.
NG
2. Playback the cleaning tape for 20 seconds.
3. Confirm the picture again.
OK
NG
4. Playback the cleaning tape for 20 seconds.
5. Confirm the picture again.
OK
NG
6. Playback the cleaning tape for 20 seconds.
7. Confirm the picture again.
OK
NG
8. Replace the Cylinder Unit
OK
Playback any normal DVC tape for 20 minutes or over.

The picture will look like this in case of clogged video head.



8.1.11. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handlings techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

8.1.12. MODEL NO. IDENTIFICATION MARK

Use Marks shown in the chart below to distinguish the different models included in this Service Manual.

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		NOT USED	PT

Note:
Refer to Item 3 of Schematic Diagram Notes of Schematic Diagram and Circuit Board Layout Notes, for Mark "PT."

9. DISASSEMBLY/ASSEMBLY PROCEDURES

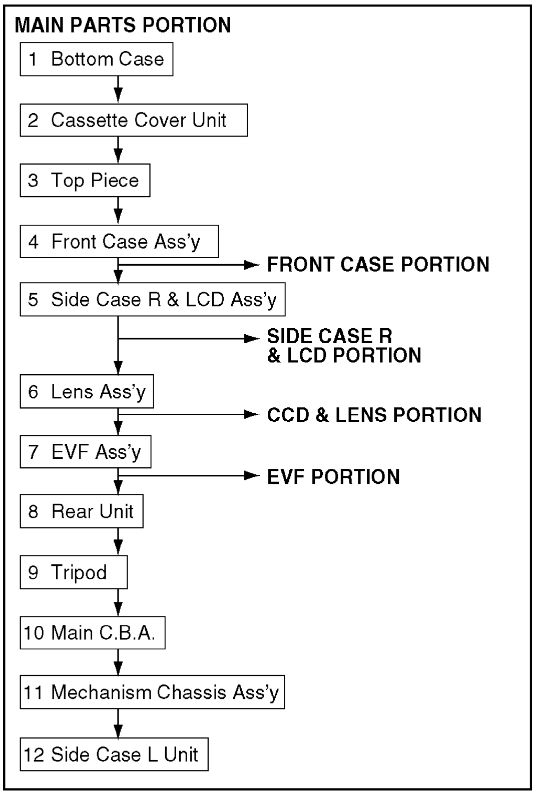
9.1. CABINET SECTION

9.1.1. DISASSEMBLY FLOWCHART

This flow chart indicates the disassembly steps of the cabinet parts and the P.C.Boards in order to gain access to item (s) to be serviced. When reassembling, perform the step (s) in the reverse

order. Bend, route and dress the wires as they were originally.

Fig. D1


MAIN PARTS PORTION
1 Bottom Case
2 Cassette Cover Unit
3 Top Piece
4 Front Case Ass'y
FRONT CASE PORTION
5 Side Case R & LCD Ass'y
SIDE CASE R & LCD PORTION
6 Lens Ass'y
CCD & LENS PORTION
7 EVF Ass'y
EVF PORTION
8 Rear Unit
9 Tripod
10 Main C.B.A.
11 Mechanism Chassis Ass'y
12 Side Case L Unit

Note :

1. When removing the cabinet, work with care so as not to break the Locking Tabs.
2. Place a cloth or some other soft material under the P.C. Boards or Unit to prevent damage.
3. When reinstalling, ensure that the connectors are connected and electrical components have not been damaged.
4. Do not supply power to the unit during disassembly and reassembly.

9.1.2. Disassembly Method

9.2. MECHANISM SECTION

This procedure starts with the condition that the cabinet parts and Main C.B.A. have been removed.
When reassembling, perform the step(s) in the reverse order.
Perform all disassembly/reassembly and alignments procedures in STOP Position except disassembly/reassembly and alignment procedures which have the special Notes.

STEP LOC. No.	Prior Step (s)	Part	Fig. No.	Remove	Alignment /Adjustment
①	-----	Not used	-		
②	-----	Guide Piece L	DM4	(478), (L-2)	
③	-----	Guide Piece R	DM4	(478), (L-2)	
④	2,3	Garage Unit	DM4		
⑤	-----	Cylinder Unit	DM5	3(503), (478)	Adjustment
⑥	2,3,4	Damper Unit	DM6	(504)	
⑦	1	DEW Sensor/ DEW Cable	DM7	Unsolder	
⑧	1,7	Mechanism F.P.C. Unit	DM8	2(478), 4(L-3), Unsolder	
⑨	-----	Reduction Gear B	DM9	(477)	
⑩	2,3,4	Mechanism Cover Unit	DM10	(432), (L-4), (475)	
⑪	2,3,4,10	Idler Arm Unit	DM11		
⑫	2,3,4,10,11	Center Gear	DM11		
⑬	2,3,4	Tension Arm Unit	DM12	(477)	Adjustment
⑭	2,3,4,13	S Reel Table	DM13	(475)	
⑮	2,3,4,	T Reel Table	DM13	(475)	
⑯	-	Not used	-		
⑰	2,3,4	T Brake Unit	DM15	(L-5), Screw, Plate	
⑱	-	Not used	-		
⑲	2,3,4	Pinch Arm Unit	DM16	(473), Hooking Portions	Adjustment
⑳	5,9,13,19	Rail	DM17	(473), (L-6), 4(L-7)	
㉑	5,9,13,19,20	Cylinder Base Unit	DM18	3(432)	Adjustment
㉒	5,9,13,19,20	S Arm Unit	DM19		Gear Alignment
㉓	5,9,13,19,20,22	T Arm Unit	DM19		Gear Alignment
㉔	5,9,13,19,20,22	S Post Unit	DM19		Adjustment
㉕	5,9,13,19,20,22,23,24	T Post Unit	DM19		Adjustment
㉖	5,9,13,19,20,21,22	Loading Motor Unit	DM20	2(429)	
㉗	2,3,4,10,11,12,13,14,15	Sensor F.P.C.	DM21	2(432)	
㉘	2,3,4,10,11,12,13,14,15,27	Tension Drive Arm	DM22		
㉙	2,3,4,10,11,12,13,14,15,27,28	S Brake Drive Lever	DM22		
㉚	2,3,4,10,11,12,13,14,15,27,28,29	Cam Gear	DM23		Gear Alignment
㉛	2,3,4,10,11,12,13,14,15,19,27	Pinch Drive Arm	DM24		
㉜	2,3,4,5,9,10,11,12,13,14,15,19,20,22,23,24,25,27,28,29,30	Intermediate Gear	DM24		Gear Alignment
㉝	1,2,3,4,5,7,8,9,10,11,12,13,14,15,19,20,21,22,23,24,25,27,28,29,30	Mode Switch	DM25	(432)	Gear Alignment
㉞	1,2,3,4,7,8	MIC Switch	DM26	(432)	
㉟	2,3,4,10,11,12,13,14,15,17,19,27,28,29,30,31	Main Plate Unit	DM27		Gear Alignment
㊱	2,3,4,10,11,12,13,14,15,17,19,27,28,29,30,31,35	T4 Drive Arm	DM28		
㊲	2,3,4,10,11,12,13,14,15,17,19,27,28,29,30,31,35,36	Drive Pulley	DM29		
㊳	2,3,4,5,6,9,10,11,12,13,14,15,17,19,20,21,22,23,24,25,27,28,29,30,31,35,36,37,39	Capstan Unit	DM30	(471), 2(432)	Adjustment
㊴	2,3,4,5,6,9,10,11,12,13,14,15,17,19,20,21,22,23,24,25,27,28,29,30,31,35,36,37,38	Timing Belt	DM30		
㊵	2,3,4,5,6,9,10,11,12,13,14,15,17,19,20,21,22,23,24,25,27,28,29,30,31,35,36,37,38,39	Capstan Adjust Spring	DM30		
㊶	1,2,3,4,7,8,34	Lock Lever Unit	DM31	2(473), Hooking Portion	
㊷	1,2,3,4,7,8,34,41	Lock Pick Lever	DM31		
↑ A	↑ B	↑ C	↑ D	↑ E	↑ F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
B: Steps to be completed prior to the current step.
C: Part to be removed or installed.
D: Fig. No. showing Procedure or Part Location.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
2(478)= 2 Screws (478), 2(L-1) =2 Looking Tabs (L-1)
F: Alignment/ Adjustment which is required when installing or replacing each parts.

CAUTION:

a. Use a wrist strap to provide ESD protection while disassembling or assembling.
b. Removed Cut Washer is not reusable. If removed, install a new one.
Following Cut Washers are to be used:

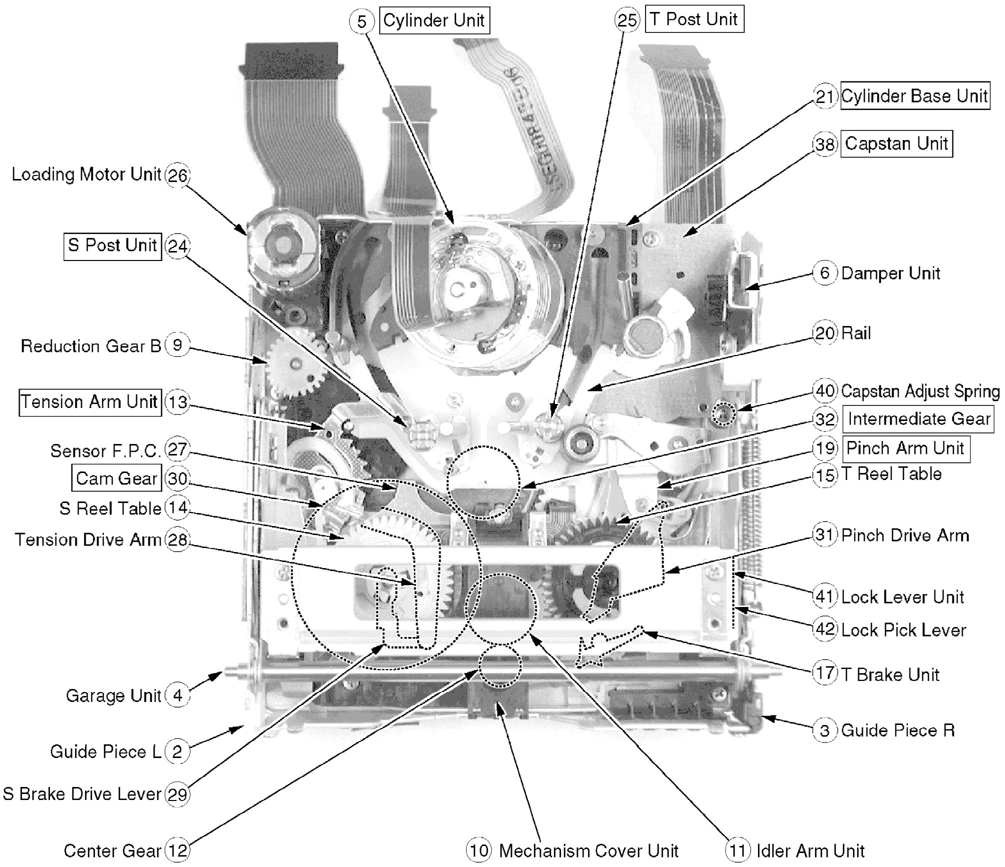
Ref. No.	Part No.
(473)	VMX2026
(475)	VMX2750
(477)	VMX2028

9.2.1. Inner Parts Location

Note: BOX indicates alignment (Gear alignment or Tape Path Alignment) required when a part is replaced.

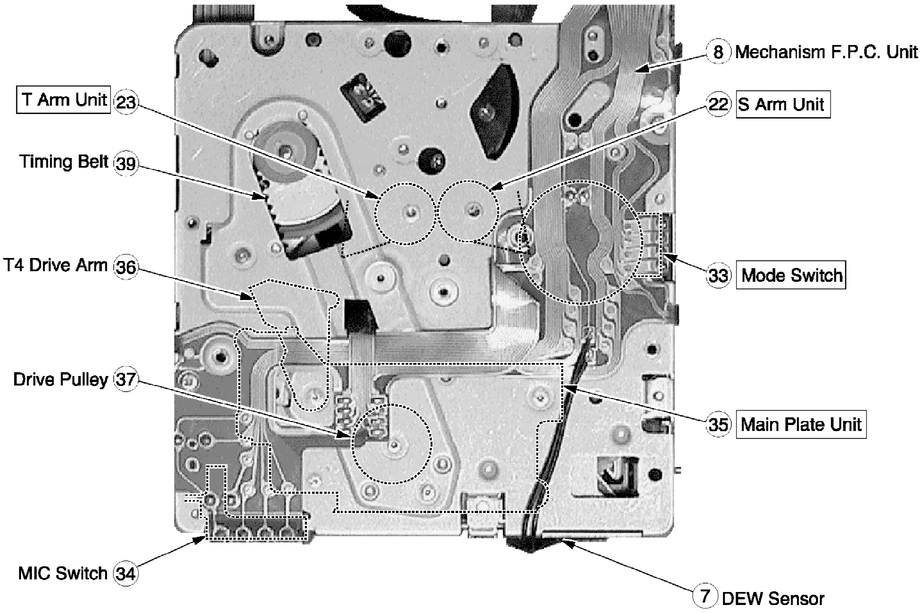
9.2.1.1. TOP VIEW

Fig. DM1-1


5 Cylinder Unit
25 T Post Unit
21 Cylinder Base Unit
38 Capstan Unit
Loading Motor Unit 26
S Post Unit 24
6 Damper Unit
20 Rail
Reduction Gear B 9
Tension Arm Unit 13
40 Capstan Adjust Spring
32 Intermediate Gear
19 Pinch Arm Unit
Sensor F.P.C. 27
15 T Reel Table
Cam Gear 30
S Reel Table 14
Tension Drive Arm 28
31 Pinch Drive Arm
41 Lock Lever Unit
42 Lock Pick Lever
17 T Brake Unit
Garage Unit 4
3 Guide Piece R
Guide Piece L 2
S Brake Drive Lever 29
Center Gear 12
10 Mechanism Cover Unit
11 Idler Arm Unit

9.2.1.2. BOTTOM VIEW

Fig. DM1-2

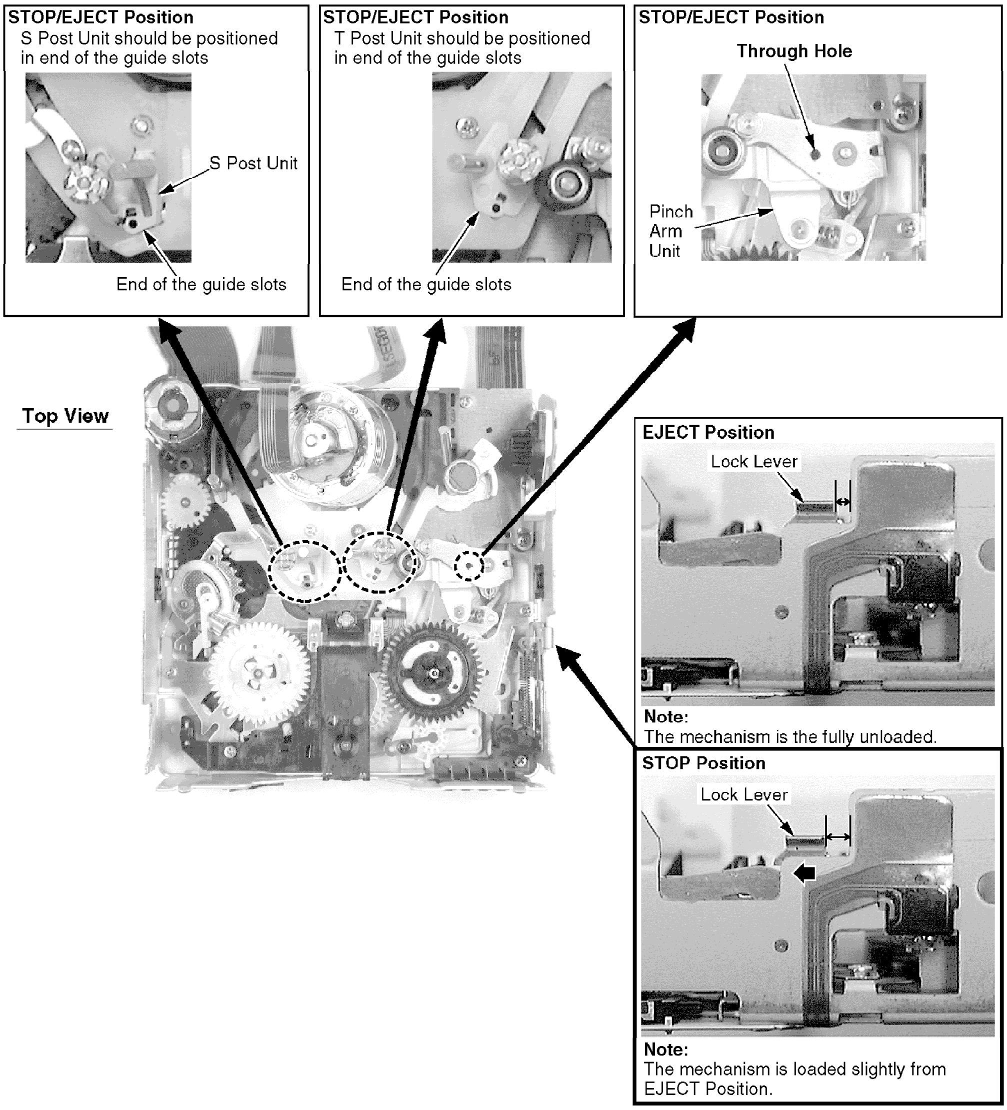

8 Mechanism F.P.C. Unit
T Arm Unit 23
22 S Arm Unit
Timing Belt 39
T4 Drive Arm 36
33 Mode Switch
Drive Pulley 37
35 Main Plate Unit
MIC Switch 34
7 DEW Sensor

9.2.2. STOP Position Confirmation

Check the following points to confirm that the Mechanism is in

STOP Position from the top side.

Fig. DM2


STOP/EJECT Position
S Post Unit should be positioned in end of the guide slots
S Post Unit
End of the guide slots
STOP/EJECT Position
T Post Unit should be positioned in end of the guide slots
End of the guide slots
STOP/EJECT Position
Through Hole
Pinch Arm Unit
Top View
EJECT Position
Lock Lever
STOP Position
Lock Lever

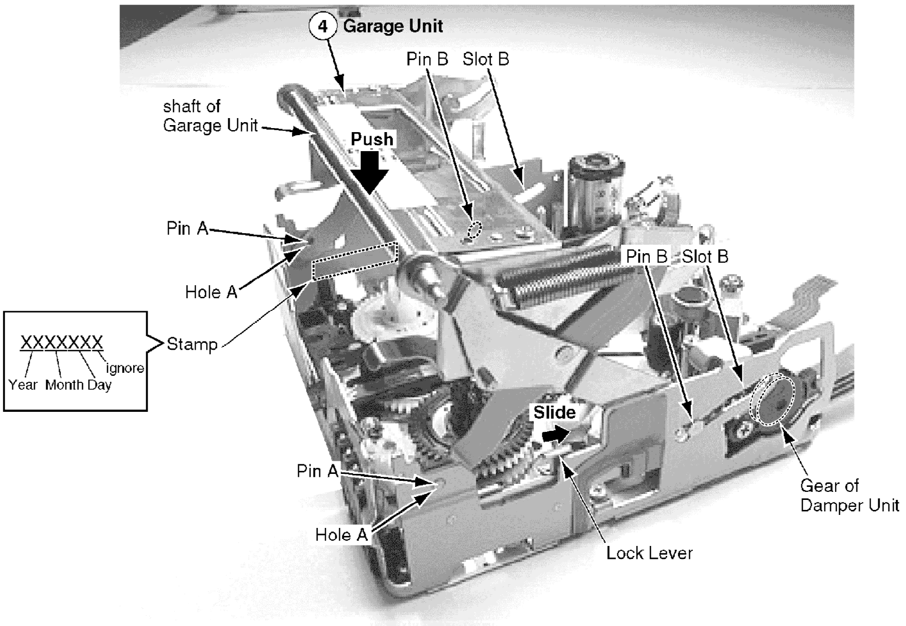
Note:
The mechanism is the fully unloaded.

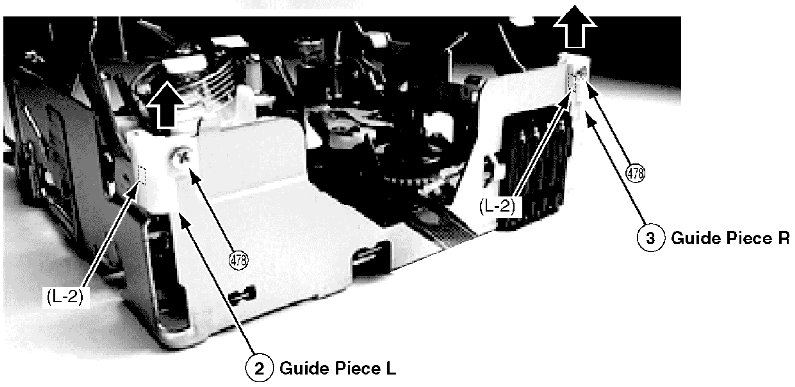
Note:
The mechanism is loaded slightly from EJECT Position.

Perform all disassembly/reassembly and alignments procedures in STOP Position except disassembly/reassembly and alignment procedures which have the special notes.

9.2.3. Guide Piece L, Guide Piece R, Garage Unit

Fig. DM4


④ Garage Unit
Pin B
Slot B
shaft of Garage Unit
Push
Pin A
Hole A
XXXXXXX
Year
Month
Day
ignore
Stamp
Pin B
Slot B
Slide
Pin A
Hole A
Gear of Damper Unit
Lock Lever


478
(L-2)
③ Guide Piece R
478
(L-2)
② Guide Piece L

Disassembly Notes:

1. Before removing the Garage Unit, eject the Garage Unit by sliding the Lock Lever to the direction of the arrow.
2. When removing the Garage Unit, pull 2 Pin A from 2 Hole A, and then pull 2 Pin B from 2 Slot B.

Reassembly Notes:

1. Installation of Garage Unit

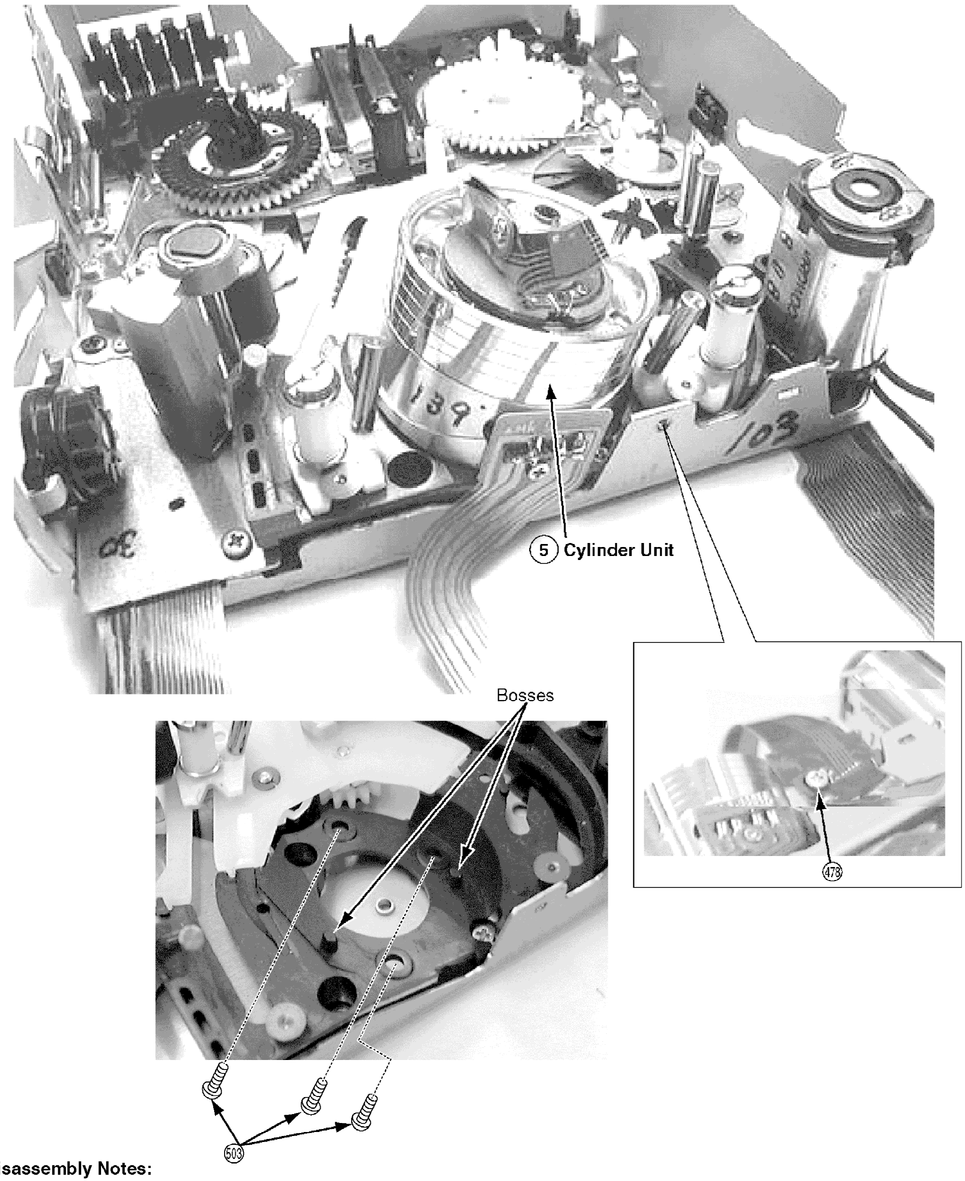
1) Install the Garage Unit so that 2 Pin B of Garage Unit are inserted to 2 Slot B on chassis.
2) Insert the 2 Pin A to 2 Hole A on chassis.

CAUTION:

When making the Garage Unit in the down position, be sure to push the shaft of Garage Unit as shown. Otherwise, the Garage Unit may be damaged.

9.2.4. Cylinder Unit

Fig. DM5



Disassembly Notes:

1. Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing. Use extreme care to handle the Cylinder Unit.

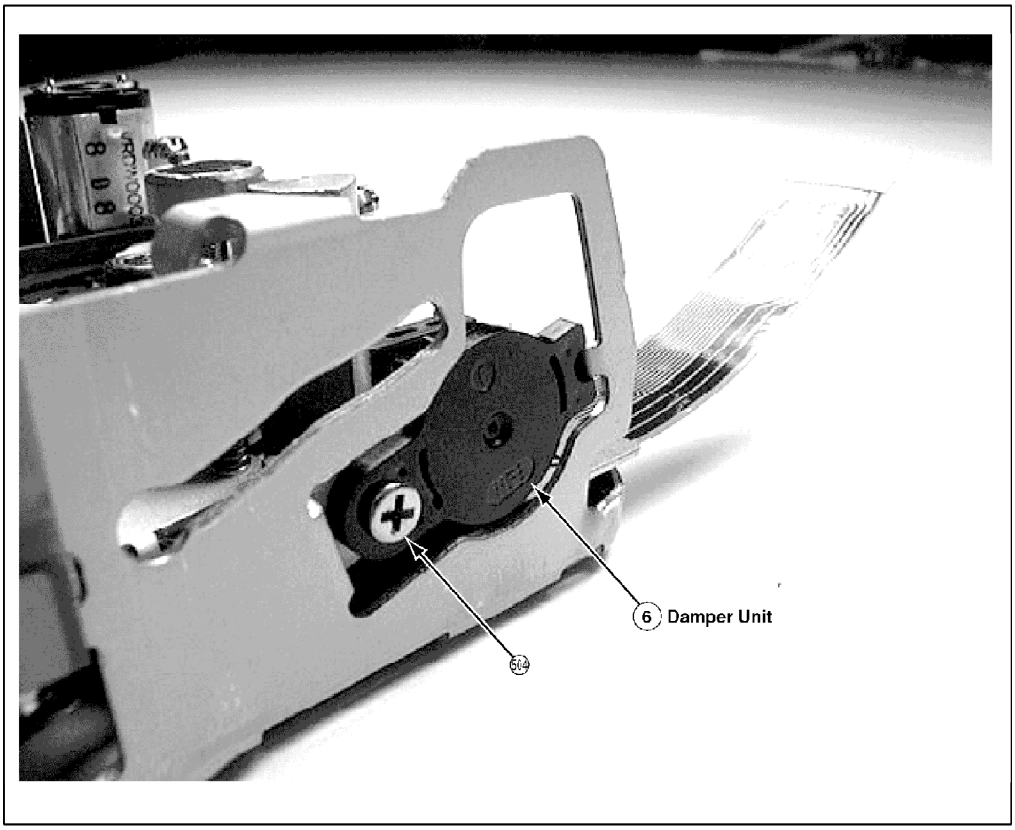
Reassembly Notes:

1. Installation of Cylinder Unit

1) Install the Cylinder Unit so that 2 Holes on the Cylinder Unit surface fit over the 2 Bosses on the Chassis. Then, tighten 3 Screws (503).

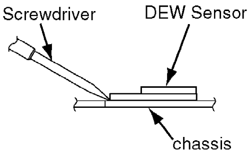
9.2.5. Dumper Unit

Fig. DM6

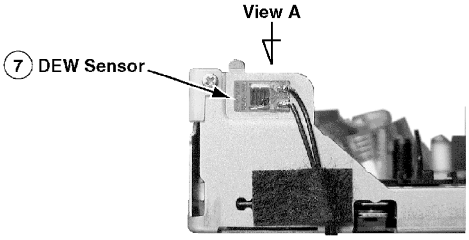

6 Damper Unit
604

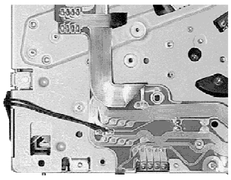
9.2.6. DEW Sensor, DEW Cable

Fig. DM7


Screwdriver
DEW Sensor
chassis

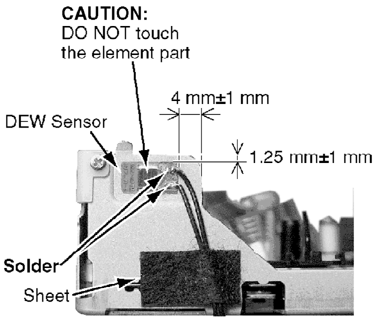
View A

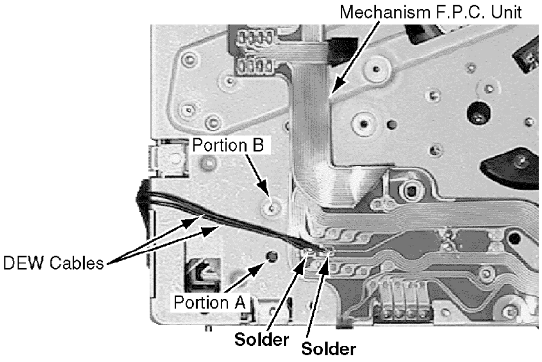

View A
⑦ DEW Sensor



Bottom View

See Reassembly Notes.


CAUTION:
DO NOT touch
the element part
4 mm±1 mm
DEW Sensor
1.25 mm±1 mm
Solder
Sheet


Mechanism F.P.C. Unit
Portion B
DEW Cables
Portion A
Solder
Solder

Disassembly Notes:

1. When removing the DEW Sensor, remove it using a screwdriver etc. as shown.

Reassembly Notes:

1. Installation of DEW Sensor, DEW Cables

The DEW Sensor or the DEW Cables is supplied separately as replacement parts. When replacing the DEW Sensor, be sure to replace both the DEW Sensor and the DEW Cables.

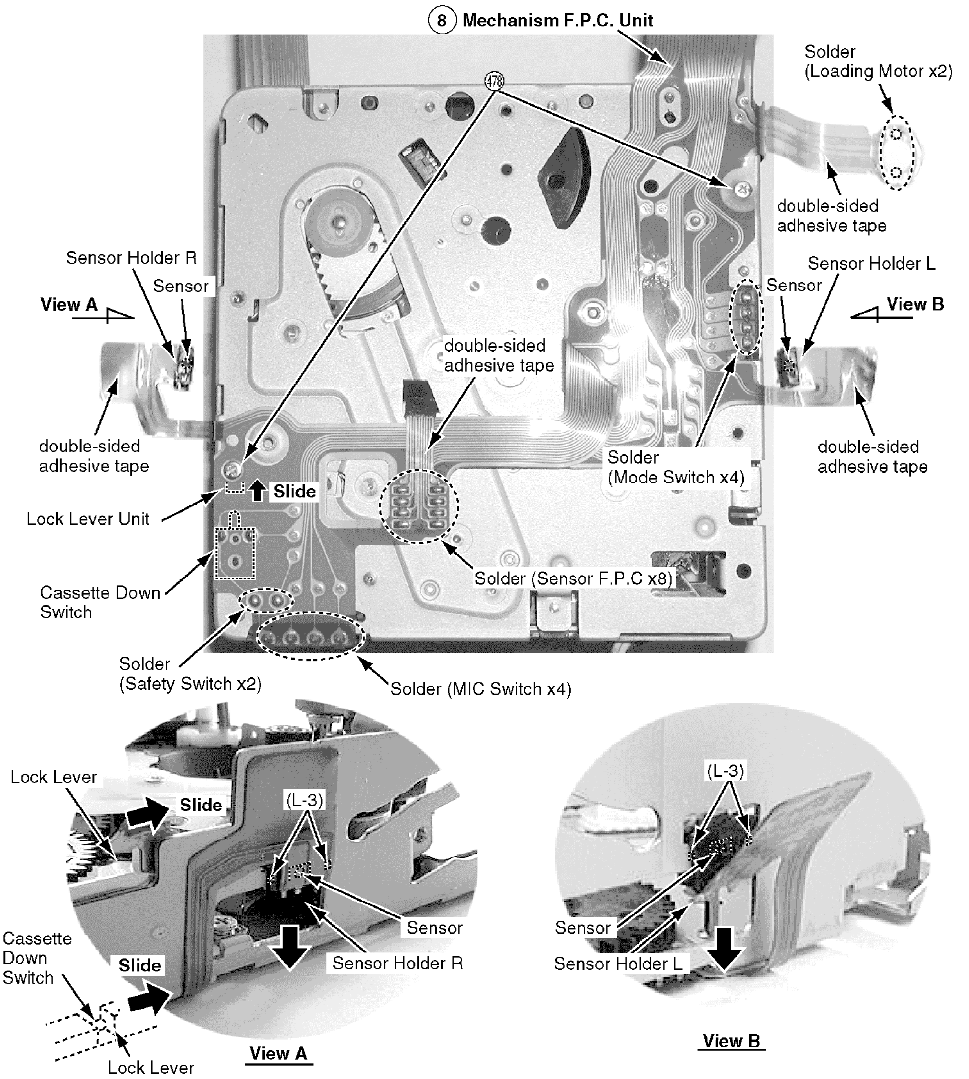
DO NOT touch the element part on DEW Sensor when installing it.

1) Put the DEW Sensor on chassis with adhesive securely, and solder the DEW Cables on the DEW Sensor as shown.

2) Shape the DEW Cables between Portion A and Portion B on the bottom of Mechanism. Then, solder it on the Mechanism F.P.C. Unit as shown.

9.2.7. Mechanism F.P.C. Unit

Fig. DM8


⑧ Mechanism F.P.C. Unit
478
Solder
(Loading Motor x2)
double-sided
adhesive tape
Sensor Holder L
Sensor
View B
Sensor Holder R
Sensor
View A
double-sided
adhesive tape
double-sided
adhesive tape
Solder
(Mode Switch x4)
double-sided
adhesive tape
Lock Lever Unit
Slide
Cassette Down
Switch
Solder (Sensor F.P.C x8)
Solder
(Safety Switch x2)
Solder (MIC Switch x4)
Lock Lever
Slide
(L-3)
Sensor
Sensor Holder R
Cassette
Down
Switch
Slide
Lock Lever
View A
(L-3)
Sensor
Sensor Holder L
View B

Disassembly Notes:

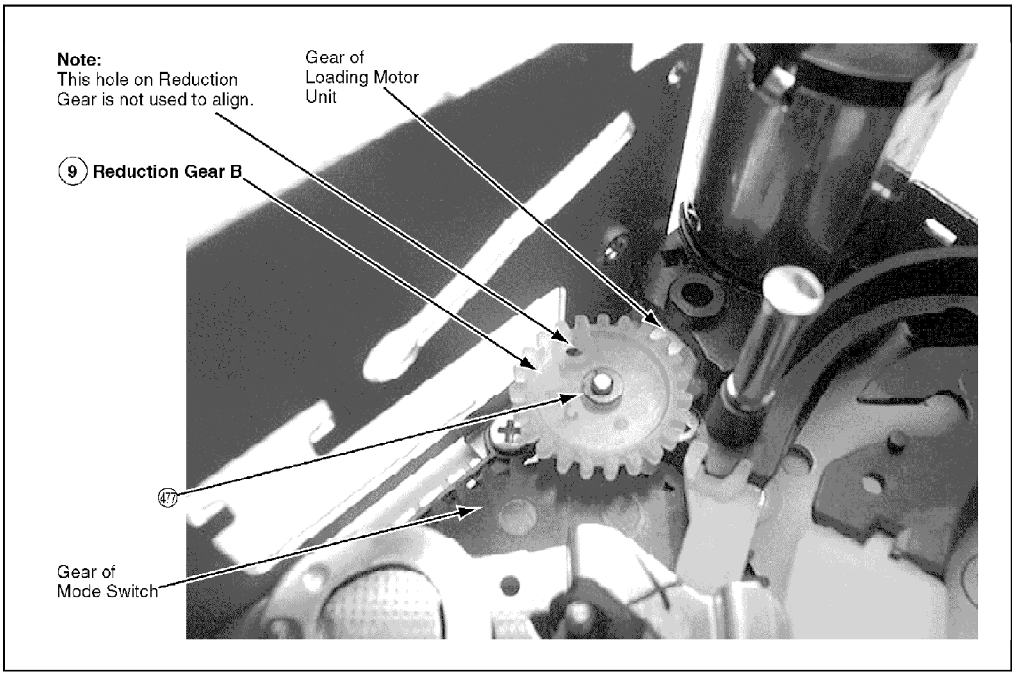
1. DO NOT touch the Sensor on Sensor Holder Unit when removing.
2. When removing the Sensor Holder L & R, slide the Sensor Holder Unit as indicated by the arrow while releasing the 4 Locking Tabs (L-3).

Reassembly Notes:

1. Before installing the Mechanism F.P.C. Unit, confirm that the Lock Lever is slid as indicated by the arrow and held as shown. Otherwise, the Lock Lever may damage the Cassette Down Switch.
2. Solder the points on Sensor F.P.C. x8, MIC Switch x4, Mode Switch x4, Safety Switch x2, and Loading Motor x2 when soldering.
3. When installing the Mechanism F.P.C. Unit, secure the Sensor Holder L & R with the 4 Locking Tabs (L-3), and then put with double-sided adhesive tape.

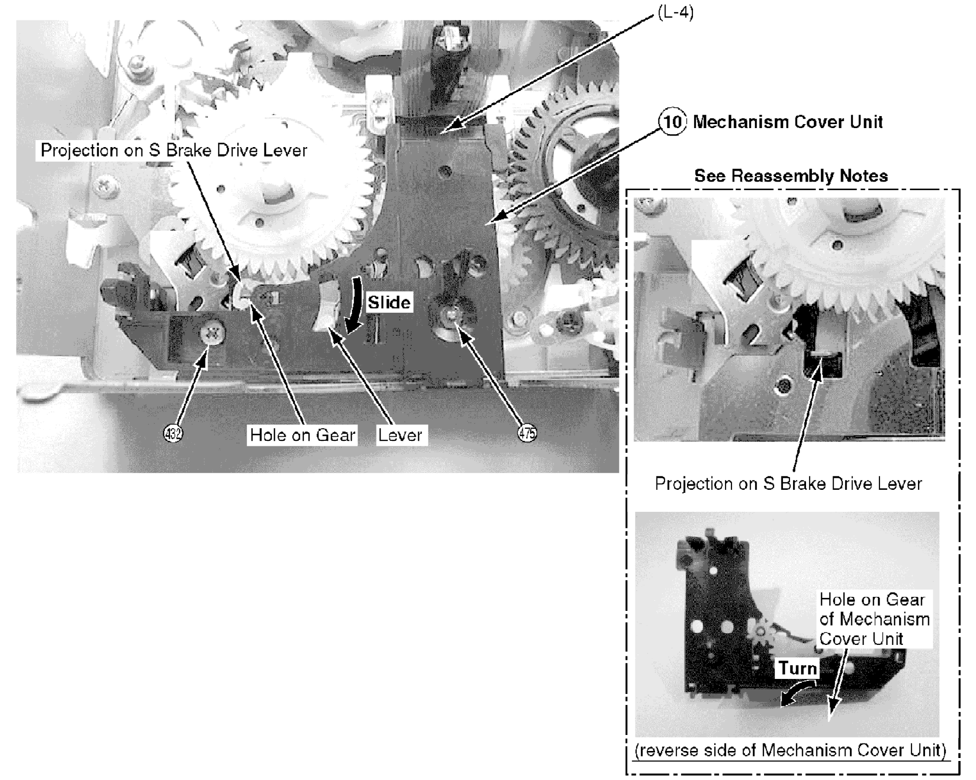
9.2.8. Reduction Gear B

Fig. DM9


Note:
This hole on Reduction Gear is not used to align.
Gear of Loading Motor Unit
⑨ **Reduction Gear B**
(477)
Gear of Mode Switch

9.2.9. Mechanism Cover Unit

Fig. DM10

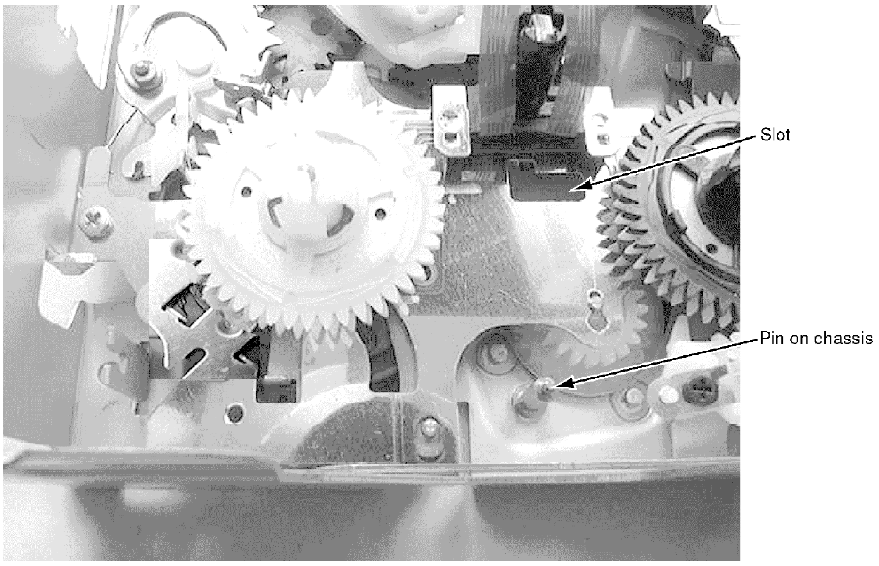

(L-4)
⑩ Mechanism Cover Unit
See Reassembly Notes
Projection on S Brake Drive Lever
Slide
432
Hole on Gear
Lever
475
Projection on S Brake Drive Lever
Hole on Gear of Mechanism Cover Unit
Turn
(reverse side of Mechanism Cover Unit)

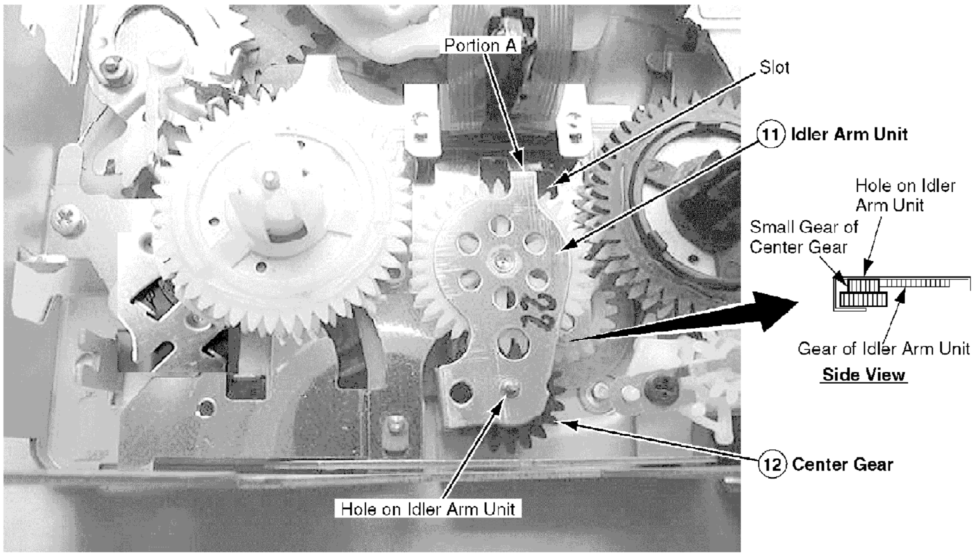
Disassembly Notes:
1. Before removing, slide the Lever as indicated by the arrow as shown.

Reassembly Notes:
1. Installation of Mechanism Cover Unit
1) Before installing, place the Mechanism in STOP Position by rotating the Mode Switch.
2) Turn the Gear on reverse side of Mechanism Cover Unit counterclockwise as shown.
3) Install the Mechanism Cover Unit so that the Projection on S Brake Drive Lever inserts to Hole on Gear of Mechanism Cover Unit.

9.2.10. Idler Arm Unit, Center Gear

Fig. DM11


Slot
Pin on chassis


Portion A
Slot
⑪ Idler Arm Unit
Hole on Idler Arm Unit
Small Gear of Center Gear
Gear of Idler Arm Unit
Side View
⑫ Center Gear
Hole on Idler Arm Unit

Disassembly Notes:

1. When removing the Idler Arm Unit, remove both of Idler Arm Unit and Center Gear together.

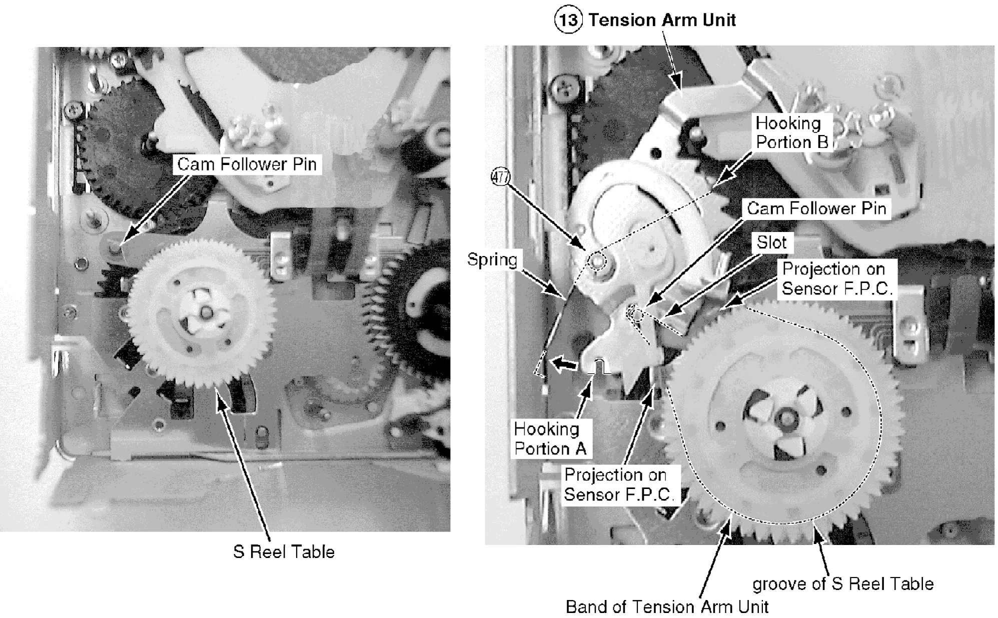
Reassembly Notes:

1. Installation of Idler Arm Unit and Center Gear

1) Set the Center Gear into Idler Arm Unit so that Hole on Idler Arm Unit are Through Holes. Confirm that the Small Gear of Center Gear engages with Gear of Idler Arm Unit.
2) Install Both of them together so that Pin on chassis is inserted to Hole on Idler Arm Unit, and Portion A is in Slot.

9.2.11. Tension Arm Unit

Fig. DM12



⑬ Tension Arm Unit
Cam Follower Pin
S Reel Table
Hooking Portion B
477
Cam Follower Pin
Spring
Slot
Projection on Sensor F.P.C.
Hooking Portion A
Projection on Sensor F.P.C.
groove of S Reel Table
Band of Tension Arm Unit

Disassembly Notes:

1. Work carefully so as not to damage the Band of Tension Arm Unit when removing.

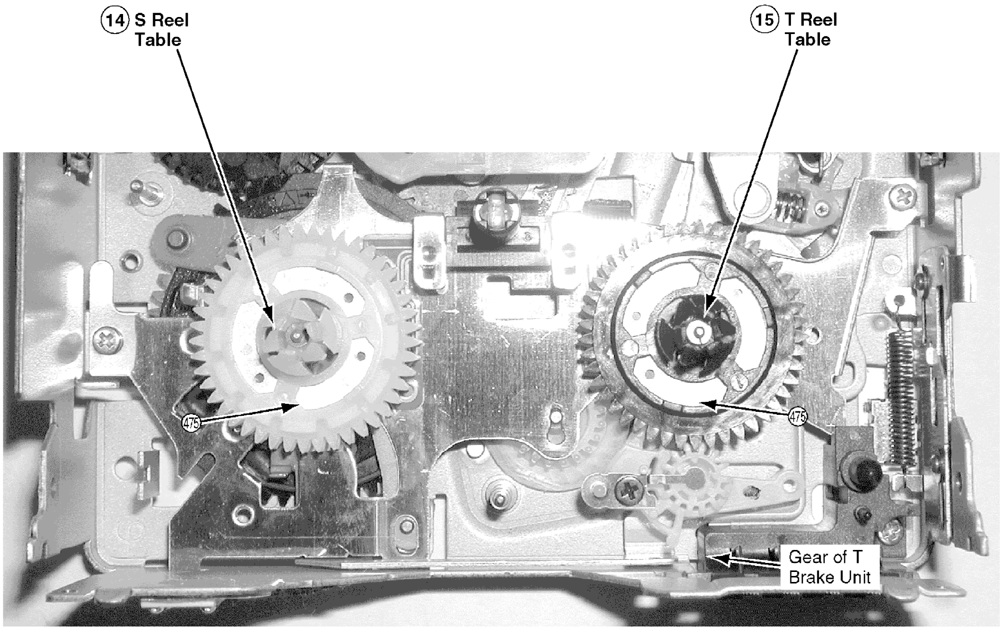
Reassembly Notes:

1. Installation of Tension Arm Unit

1) Before installing the Tension Arm Unit, place the Mechanism in STOP Position by rotating the Mode Switch, and then hook the Spring of Tension Arm Unit to Hooking Portion A and Hooking Portion B.
2) Install the Tension Arm Unit while hooking the Band of Tension Unit to groove of S Reel Table.
3) Confirm that Band of Tension Arm Unit and Projection on Sensor F.P.C. are in the correct position, and that Cam follower Pin is set into Slot of Tension Arm Unit.
4) After installing the Tension Arm Unit, unhook the Spring from Portion A, and then confirm that the Spring is in the lower position than Sensor F.P.C.

9.2.12. S Reel Table, T Reel Table

Fig. DM13


⑭ S Reel Table
⑮ T Reel Table
475
475
Gear of T Brake Unit

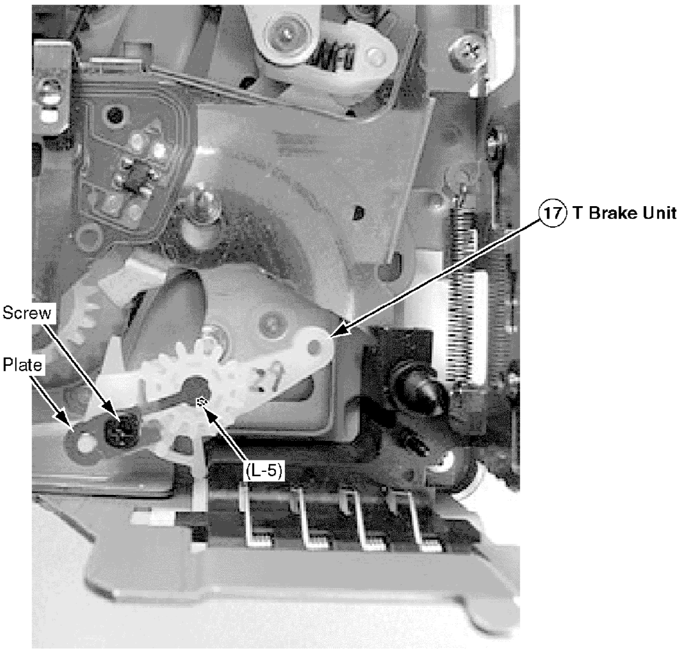
Reassembly Notes:

1. Installation of S Reel Table and T Reel Table

1) Confirm that the Gear of T Reel Table engages with the Gear of T Brake Unit.

9.2.13. T Break Unit

Fig. DM15



Disassembly Notes:

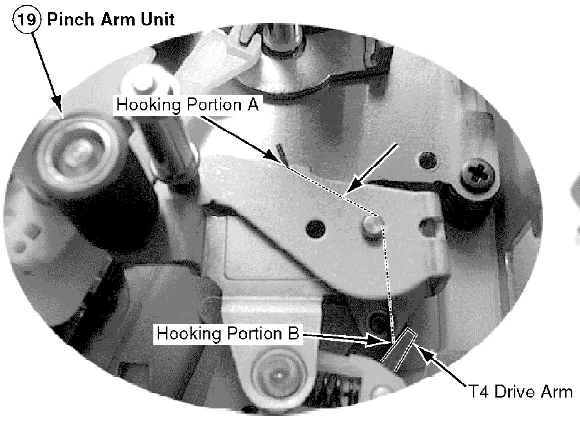
1. When removing the T Brake Unit, remove a Screw and the Plate. Then, remove the T Brake Unit while releasing the Locking Tab (L-5).
2. Use extreme care when removing the T Brake Unit.
   If Locking Tab (L-5) is broken, install a new T Brake Unit.

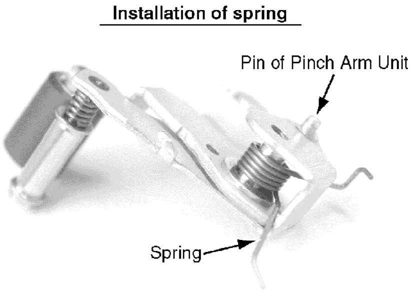
Reassembly Notes:

1. When installing the T Brake Unit, DO NOT apply pressure to T Brake Unit Plate.

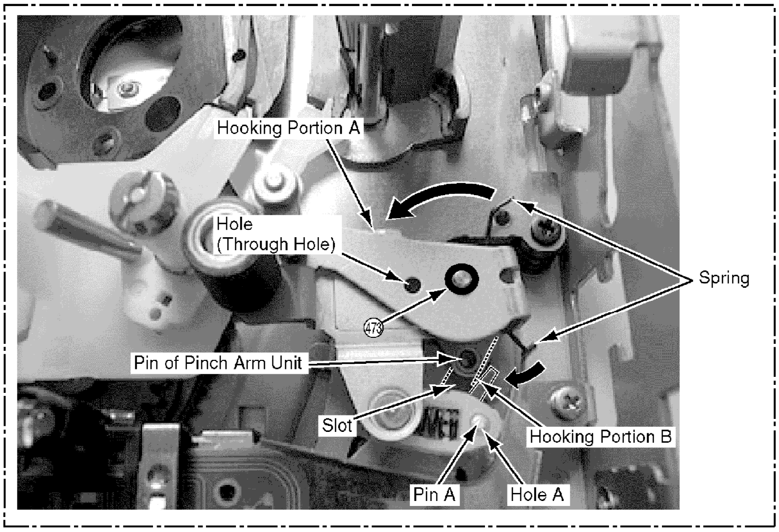
9.2.14. Pinch Arm Unit

Fig. DM16


⑲ Pinch Arm Unit
Hooking Portion A
Hooking Portion B
T4 Drive Arm


Installation of spring
Pin of Pinch Arm Unit
Spring

See Reassemly Notes.


Hooking Portion A
Hole
(Through Hole)
Spring
(473)
Pin of Pinch Arm Unit
Slot
Hooking Portion B
Pin A
Hole A

Reassembly Notes:

1. Installation of Pinch Arm Unit

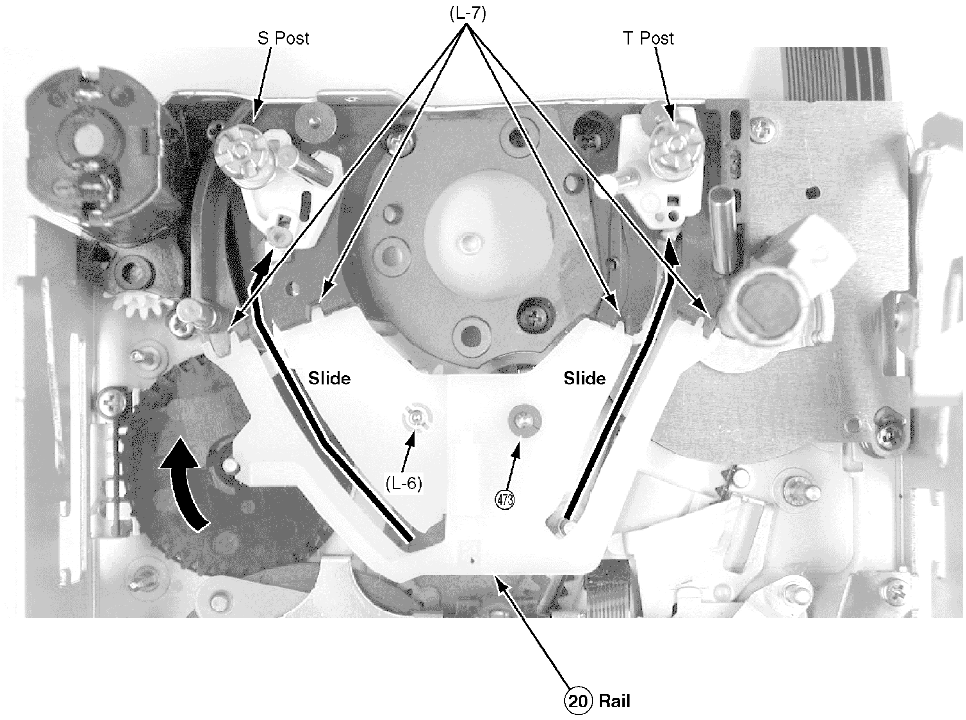
1) Before installing, place the Mechanism in STOP Position by rotating the Mode Switch counterclockwise fully.

2) Install the Pinch Arm Unit so that Pin of Pinch Arm Unit is in Slot and that Pin A is inserted to Hole A on Pinch Arm Unit. (The holes on Pinch Arm Unit are Through Hole.)

3) Hook the Spring to Hooking Portion A, and then to Hooking Portion B of T4 Drive Arm.

9.2.15. Rail

Fig. DM17



Disassembly Notes:

1. Before removing the Rail, slide the S & T Posts by rotating the Mode Switch clockwise.
2. When removing the Rail, release the Locking Tab (L-6) first so as not to damage the 4 Locking Tabs (L-7).

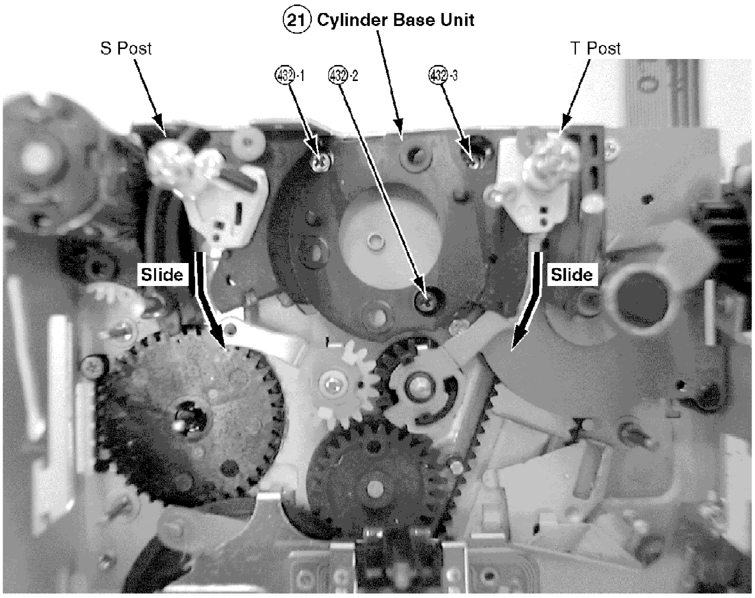
Reassembly Notes:

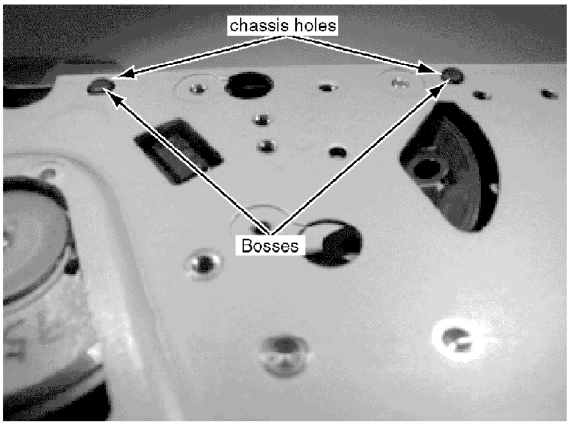
1. Installation of Rail

1) Set 4 Locking Tabs (L-7), and then push down the Rail to set Locking Tab (L-6) firmly.

9.2.16. Cylinder Base Unit

Fig. DM18


㉑ Cylinder Base Unit
S Post
T Post
(432)-1
(432)-2
(432)-3
Slide
Slide


chassis holes
Bosses

Disassembly Notes:

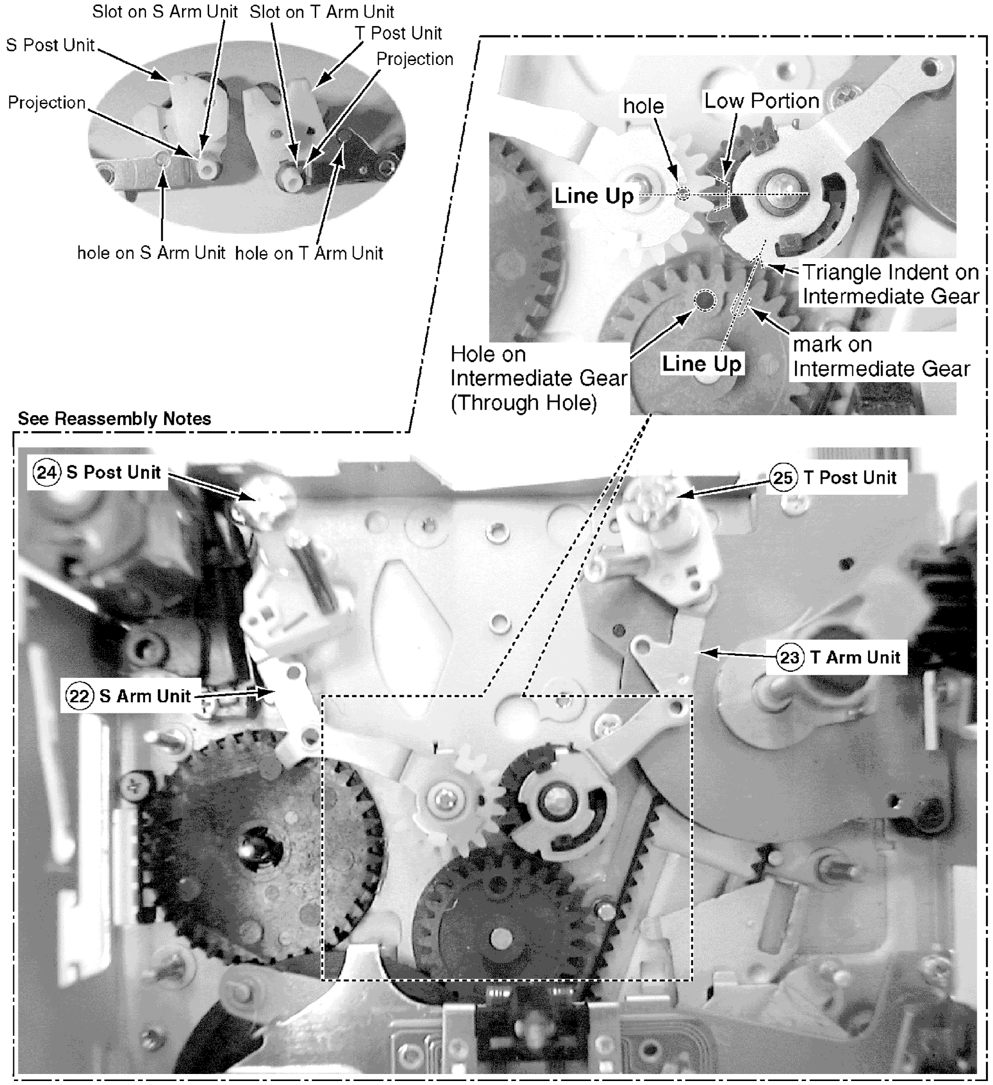
1. Slide the S & T Posts as indicated by the arrow.

Reassembly Notes:

1. Before installing the Cylinder Base Unit, confirm that the S & T Posts are lowered.
2. When installing, tighten 3 Screws (432)-1, (432)-2 and (432)-3 in order.
3. After installing, slide the S & T Posts to insert the groove of Cylinder Base Unit.

9.2.17. S& T Arm Unit, S& T Post Unit

Fig. DM19


Slot on S Arm Unit
Slot on T Arm Unit
T Post Unit
S Post Unit
Projection
Projection
hole on S Arm Unit
hole on T Arm Unit
hole
Low Portion
Line Up
Triangle Indent on Intermediate Gear
mark on Intermediate Gear
Hole on Intermediate Gear (Through Hole)
Line Up
See Reassembly Notes
㉔ S Post Unit
㉕ T Post Unit
㉓ T Arm Unit
㉒ S Arm Unit

Disassembly Notes:

1. When removing the S & T Post Unit, pass the Projections from each slots on S & T Arm Unit.

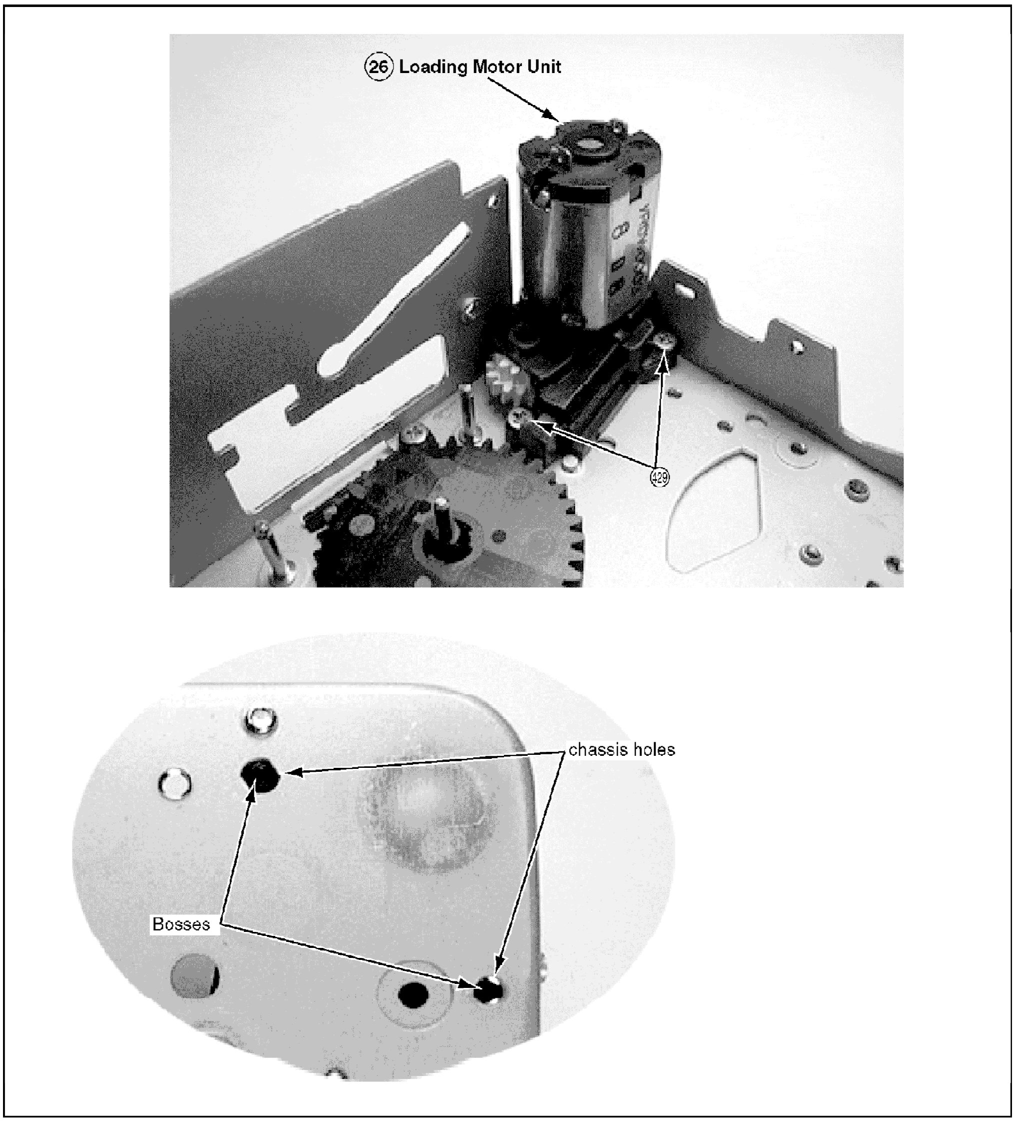
Reassembly Note:

1. Alignment/Installation of S & T Post Unit, S & T Arm Unit

1) Install the S Arm Unit to the S Post Unit while passing the Projection.
2) Install the T Arm Unit to the T Post Unit while passing the Projection.
3) Confirm that the hole on Intermediate Gear is aligned with the hole on chassis (Through Hole).
4) Install both the T Post Unit and the T Arm Unit so that the Triangle Indent on T Arm Unit is aligned with the mark on Intermediate Gear.
5) Install both the S Post Unit and the S Arm Unit so that the hole on the S Arm Unit is aligned with Low Portion of T Arm Unit.

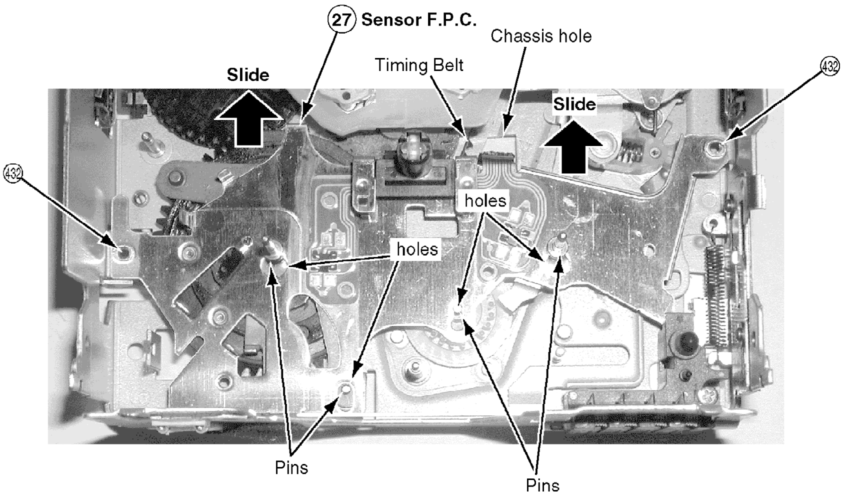
9.2.18. Loading Motor Unit

Fig. DM20


㉖ Loading Motor Unit
(429)
chassis holes
Bosses

9.2.19. Sensor F.P.C.

Fig. DM21


㉗ Sensor F.P.C.
Chassis hole
Timing Belt
Slide
Slide
(432)
(432)
holes
holes
Pins
Pins

Disassembly Notes:

1. When removing the Sensor F.P.C., slide it as indicated by the arrow.
2. Work carefully so as not to damage the F.P.C. when removing it.

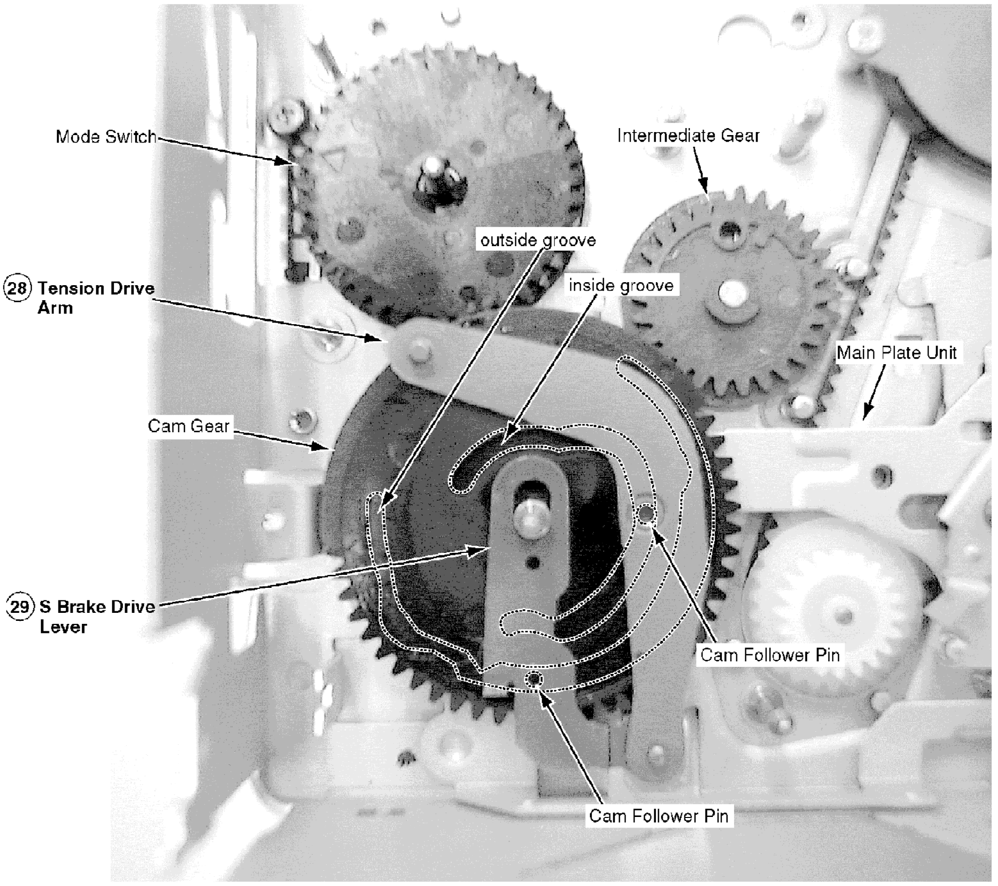
Reassembly Notes:

1. Installation of Sensor F.P.C.

1) Install the Sensor F.P.C. so that the Pins on chassis are in the holes on the Sensor F.P.C.
2) Slide the Sensor F.P.C., and then tighten 2 Screws (432).
3) Put the F.P.C. through the Chassis hole, and confirm that there is no contact between the Timing Belt and the F.P.C.

9.2.20. Tension Drive Arm, S Brake Drive Lever

Fig. DM22


Mode Switch
Intermediate Gear
outside groove
inside groove
(28) Tension Drive Arm
Main Plate Unit
Cam Gear
(29) S Brake Drive Lever
Cam Follower Pin
Cam Follower Pin

Reassembly Notes:

1. Installation of S Brake Drive Lever, Tension Drive Arm

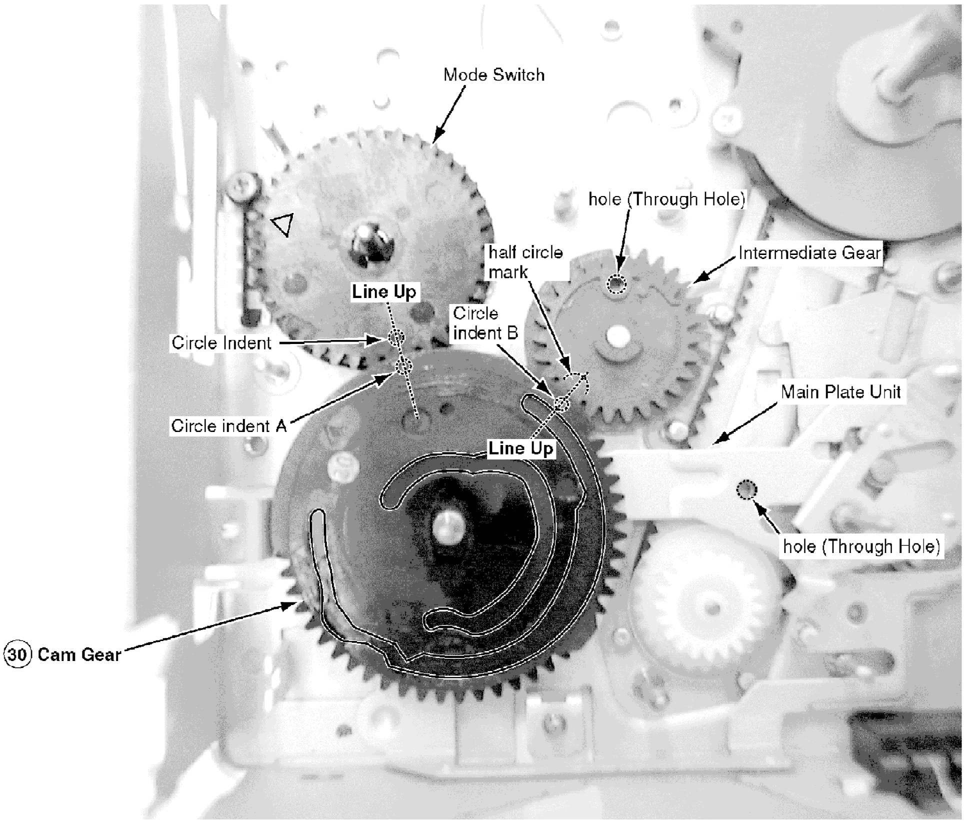
1) Confirm that the Intermediate Gear, Main Plate Unit, Mode Switch, and Cam Gear are in proper position. Refer to "Cam Gear."

2) Install the S Brake Drive Lever so that the Cam Follower Pin on S Brake Drive Lever is inserted to outside groove on the Cam Gear.

3) Install the Tension Drive Arm so that the Cam Follower Pin on Tension Drive Arm is inserted to inside groove on the Cam Gear.

9.2.21. Cam Gear

Fig. DM23


Mode Switch
hole (Through Hole)
half circle mark
Intermediate Gear
Line Up
Circle indent B
Circle Indent
Circle indent A
Main Plate Unit
Line Up
hole (Through Hole)
㉚ Cam Gear

Reassembly Notes:

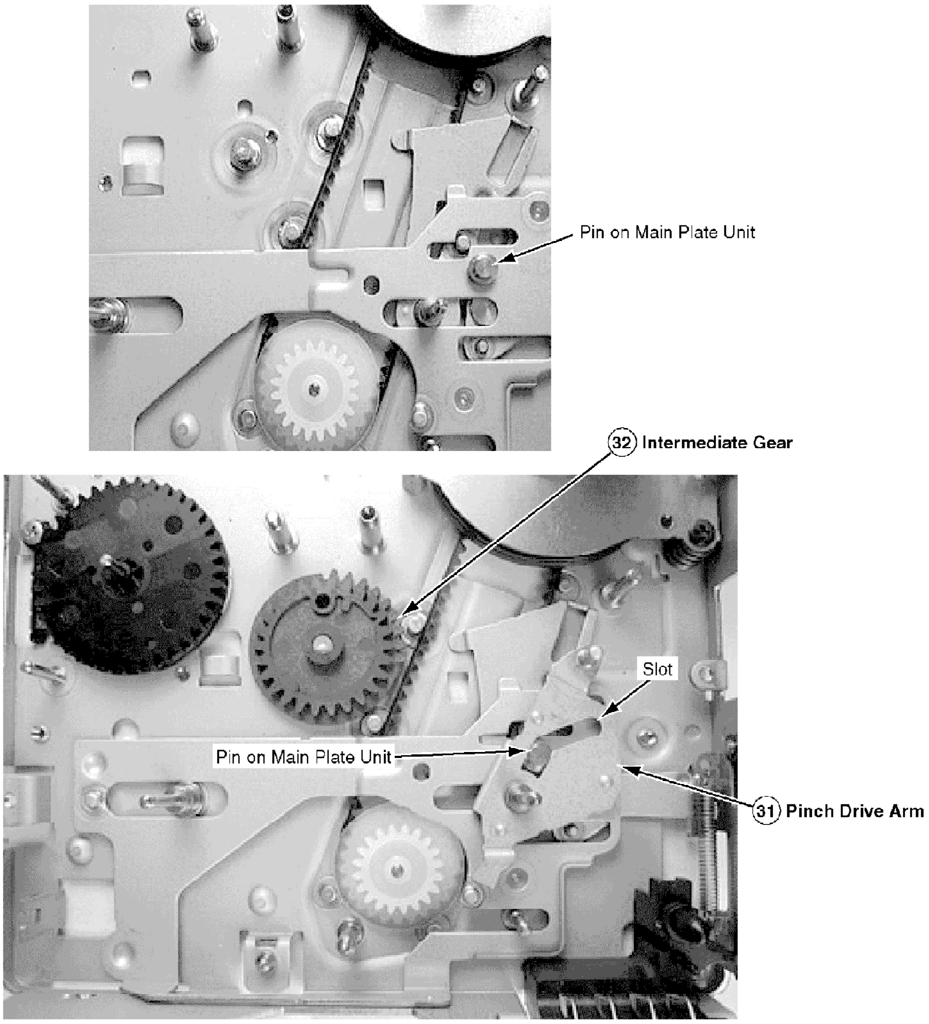
1. Alignment of Intermediate Gear, Main Plate Unit, Mode Switch, Cam Gear

1) Before installing the Cam Gear, align the hole on Intermediate Gear with hole on chassis (Through Hole), and then, align the hole on the Main Plate Unit with hole on chassis (Through Hole).

2) Install the Cam Gear so that Circle indent A on Cam Gear is aligned with Circle Indent on Mode Switch, and the Circle indent B on Cam Gear is aligned with half circle mark on Intermediate Gear.

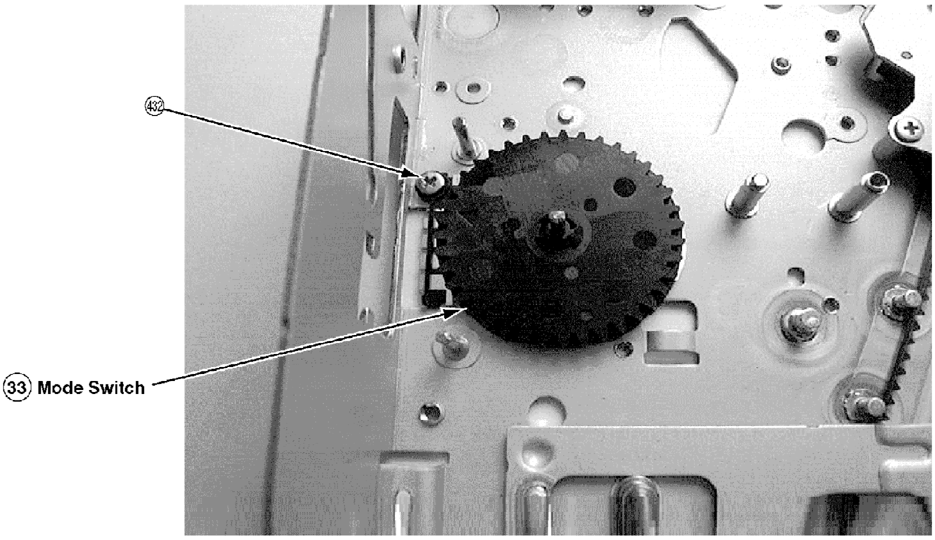
9.2.22. Pinch Drive Arm, Intermediate Gear

Fig. DM24

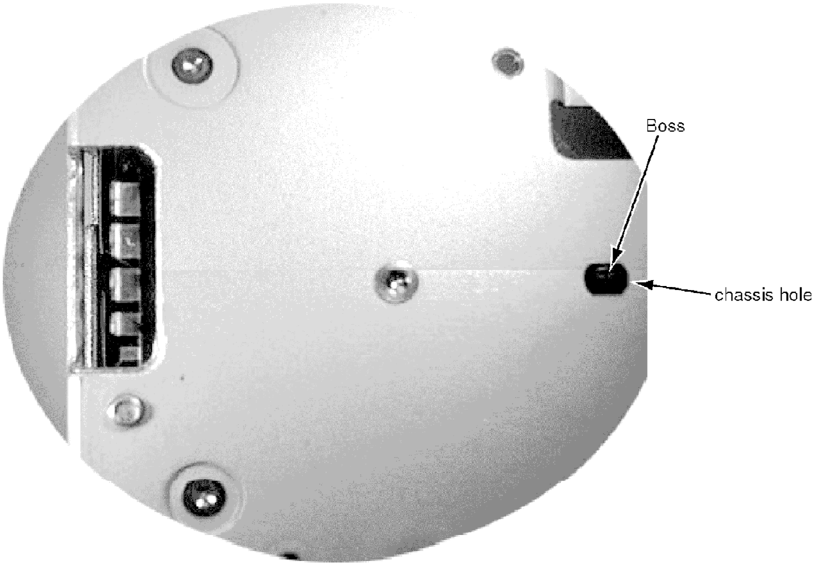

Pin on Main Plate Unit
㉜ Intermediate Gear
Slot
Pin on Main Plate Unit
㉛ Pinch Drive Arm

9.2.23. Mode Switch

Fig. DM25



432
33 Mode Switch



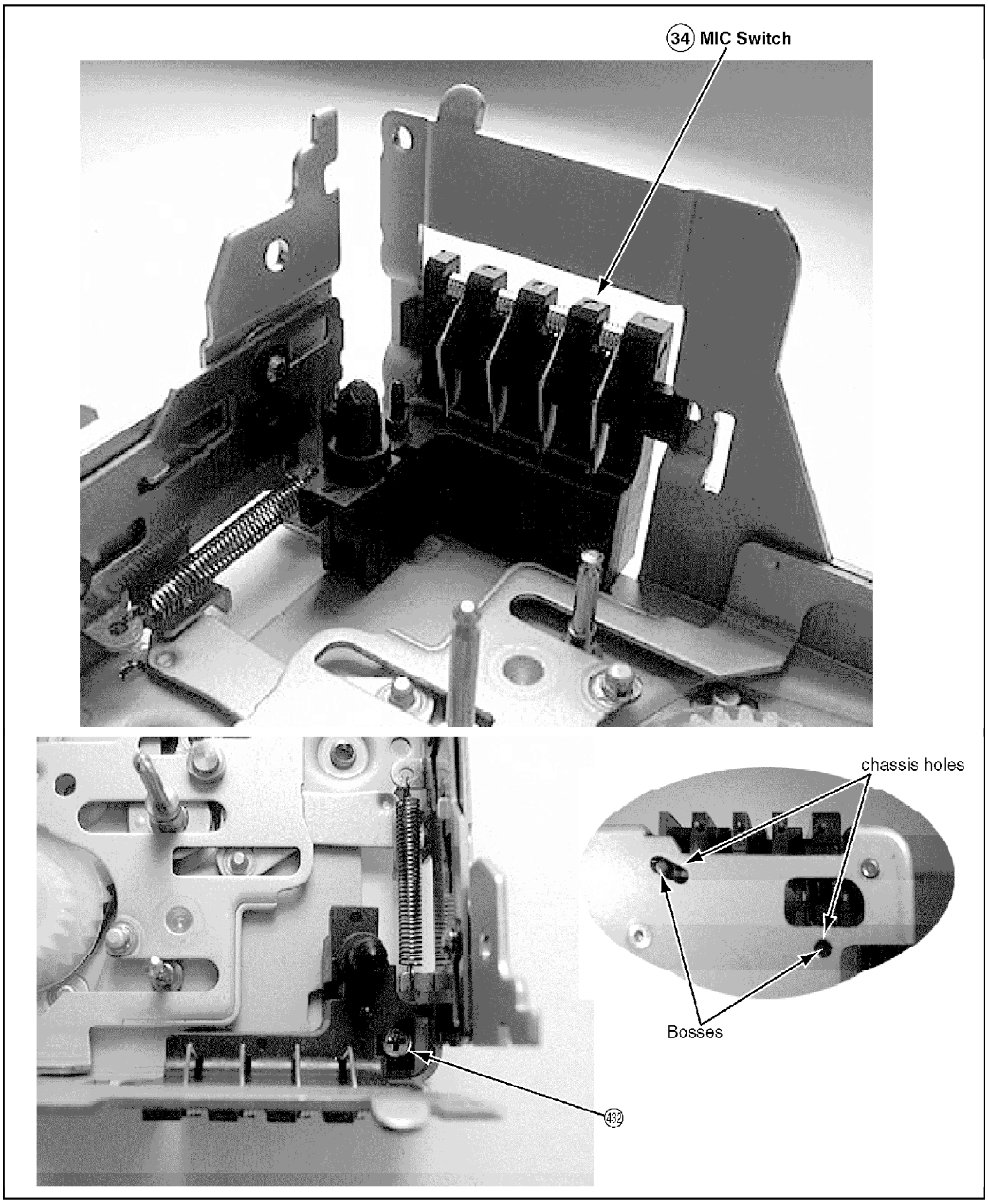
Boss
chassis hole

Reassembly Notes:

1. When installing the Mode Switch, install the Mode Switch without tottering

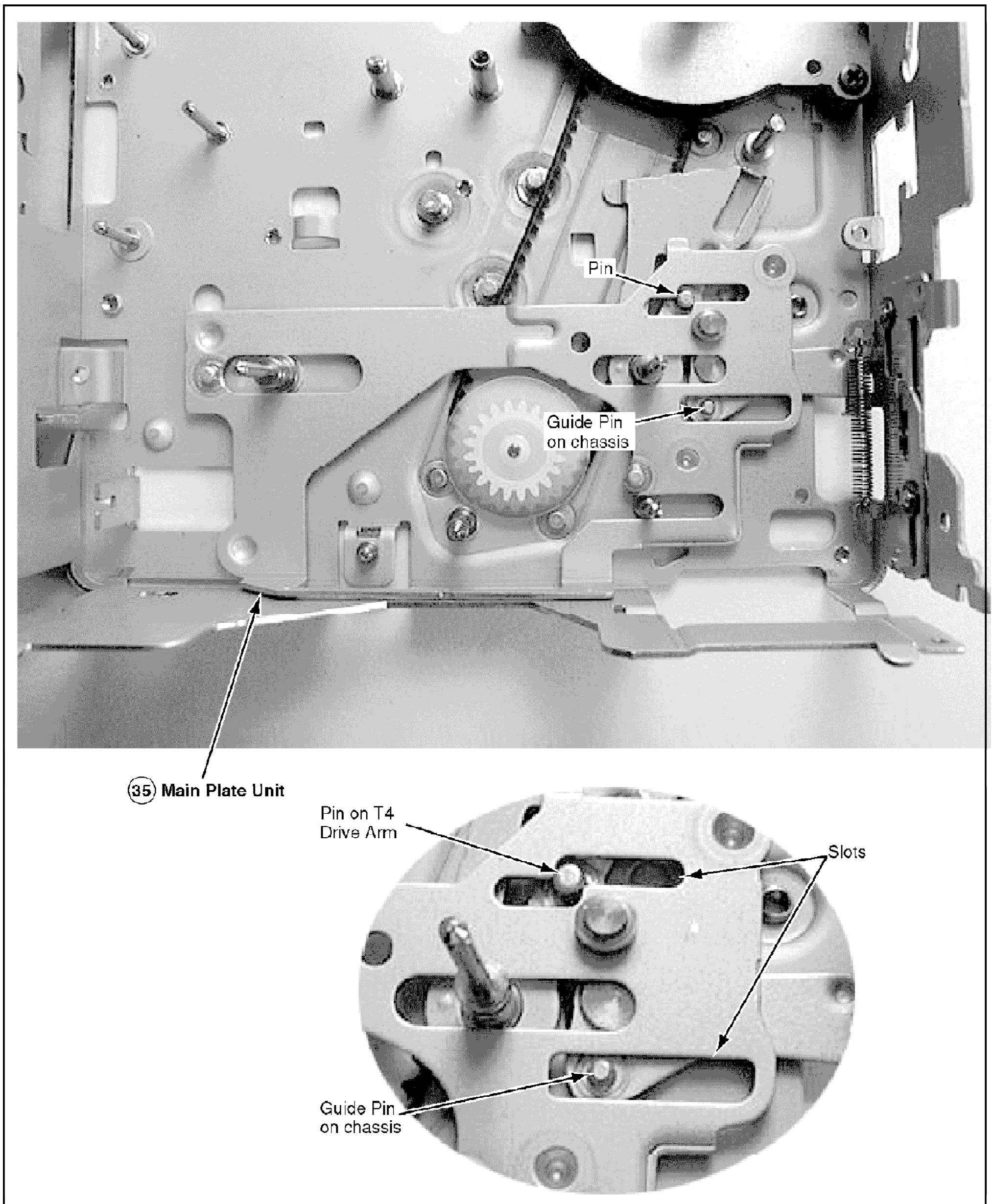
9.2.24. MIC Switch

Fig. DM26


㉞ MIC Switch
chassis holes
Bosses
(432)

9.2.25. Main Plate Unit

Fig. DM27


Pin
Guide Pin on chassis
㉟ Main Plate Unit
Pin on T4 Drive Arm
Slots
Guide Pin on chassis

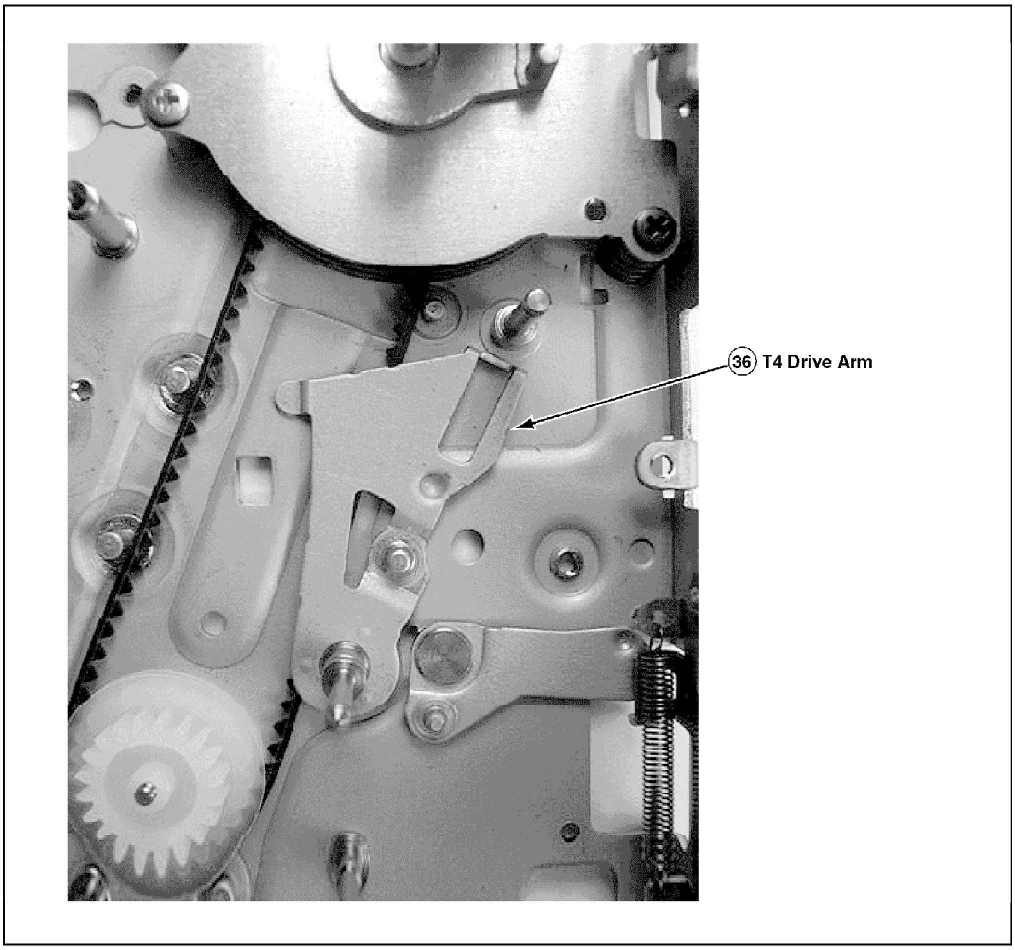
Reassembly Notes:

1. Installation of Main Plate Unit

1) Install the Main Plate Unit so that Pin on T4 Drive Arm and Guide Pin on chassis are in Slots on Main Plate Unit correctly.

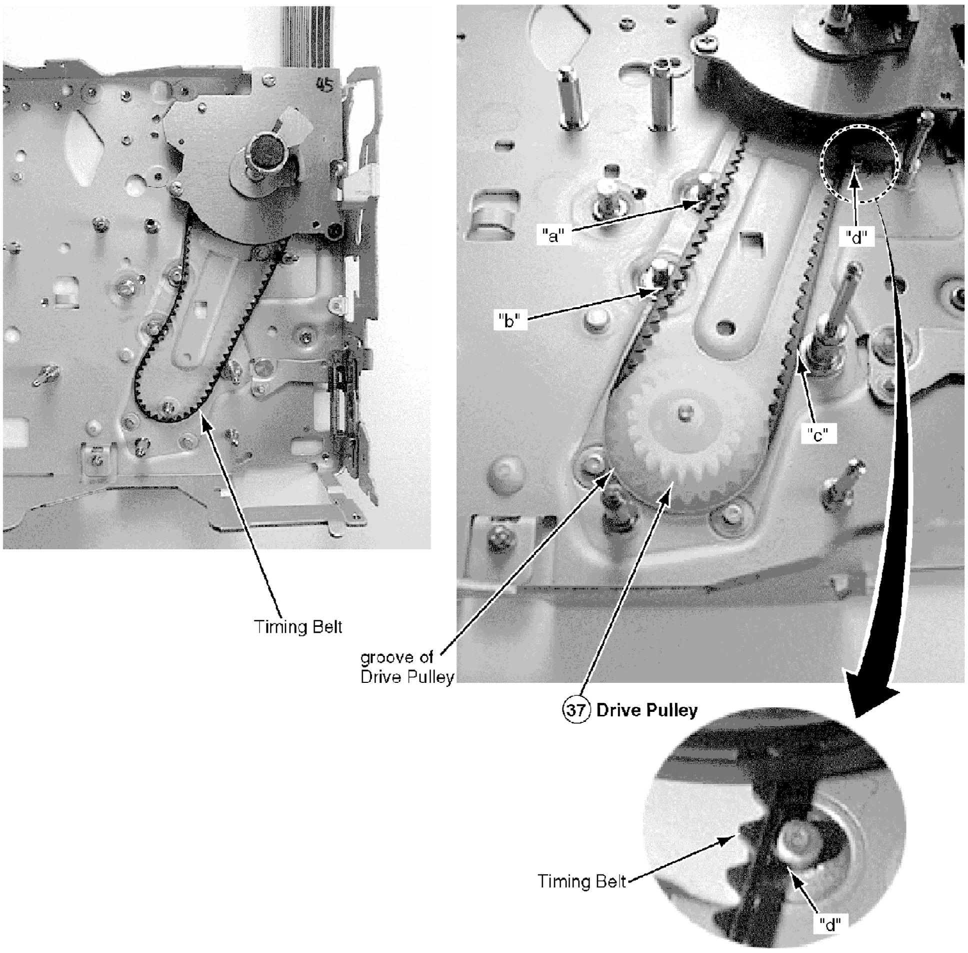
9.2.26. T4 Drive Arm

Fig. DM28


36 T4 Drive Arm

9.2.27. Drive Pulley

Fig. DM29

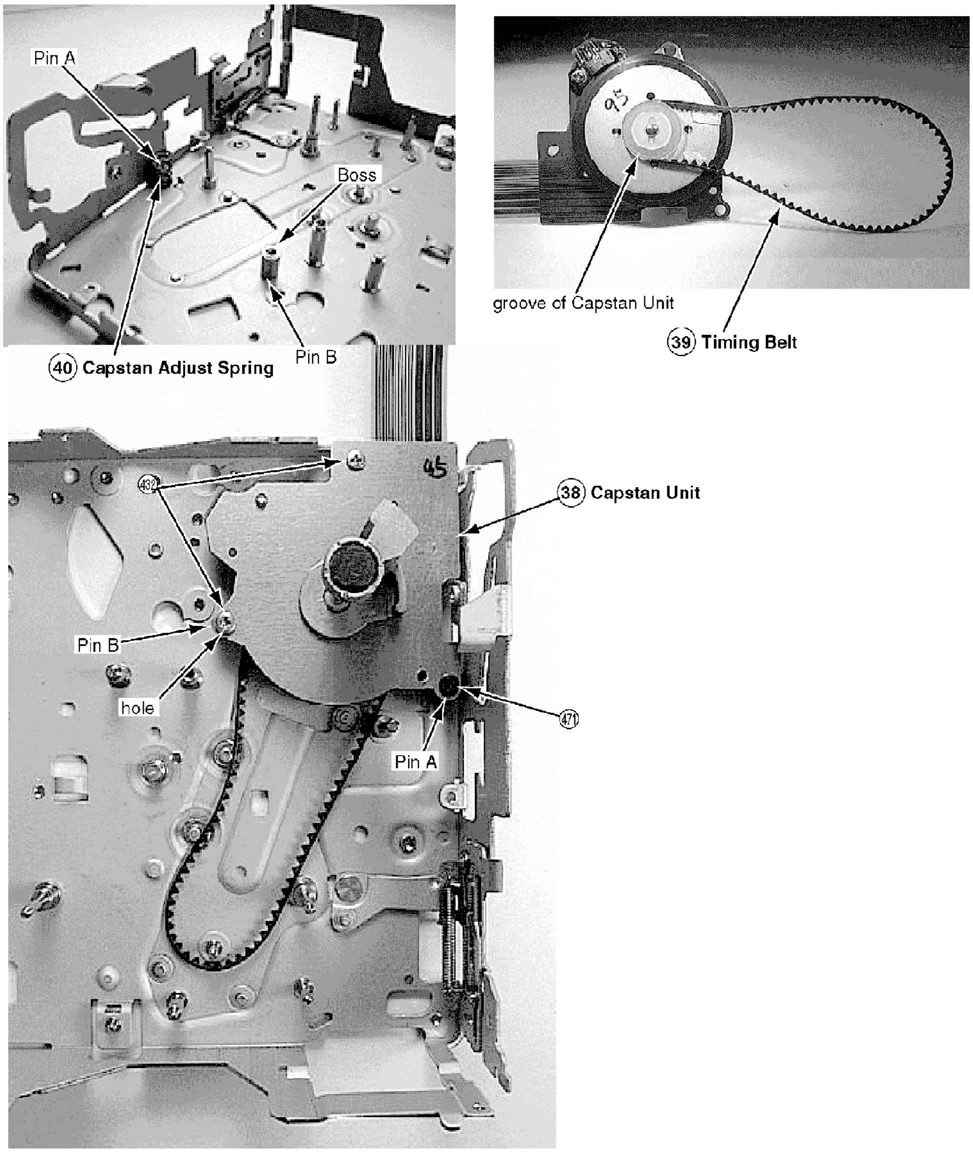

45
"a"
"b"
"c"
"d"
Timing Belt
groove of Drive Pulley
37 Drive Pulley
Timing Belt
"d"

Reassembly Notes:

1. DO NOT let the Timing Belt twist.
   Be careful so as not to let the Timing Belt touch the greased portion.
2. When installing the Drive Pulley, confirm that the Timing Belt is in correct position as shown.
3. After installing the Drive Pulley, confirm that Drive Pulley and Capstan Rotor can rotate smoothly.

9.2.28. Capstan Unit, Timing Belt, Capstan Adjust Spring

Fig. DM30

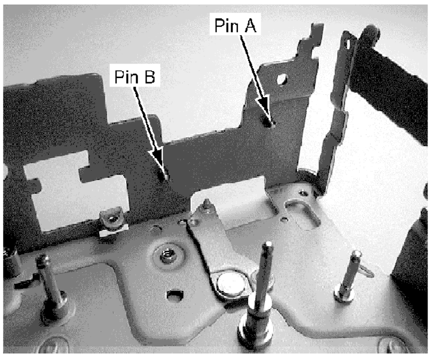

Pin A
Boss
Pin B
(40) Capstan Adjust Spring
groove of Capstan Unit
(39) Timing Belt
(38) Capstan Unit
432
Pin B
hole
Pin A
471

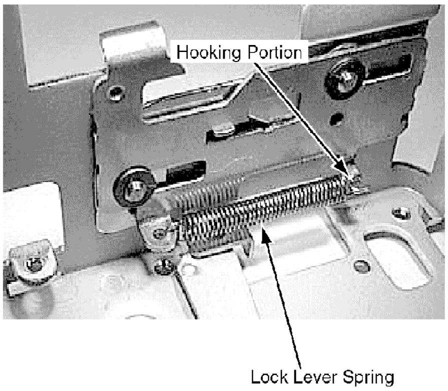
Reassembly Notes:

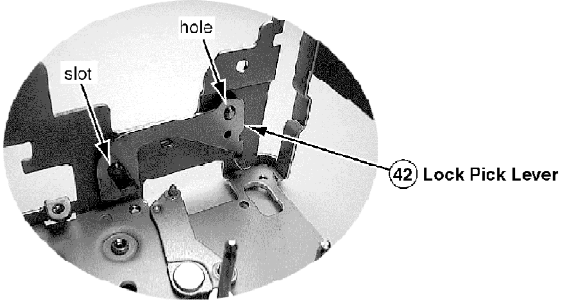
1. When installing the Capstan Unit, hook the Timing Belt to the groove of Capstan Unit.

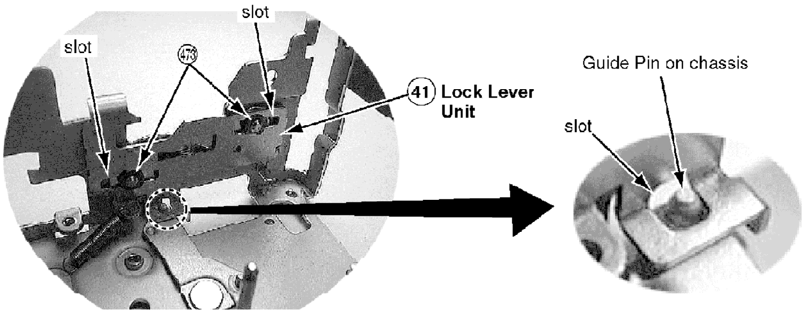
9.2.29. Lock Lever Unit, Lock Pick Lever

Fig. DM31




Hooking Portion
Lock Lever Spring


hole
slot
㊷ Lock Pick Lever


slot
slot
㊸
㊶ Lock Lever Unit
Guide Pin on chassis
slot

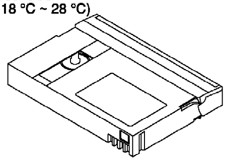
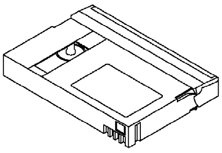
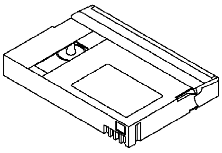
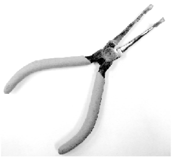
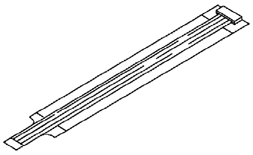
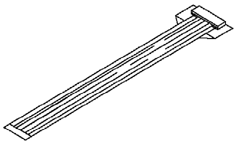
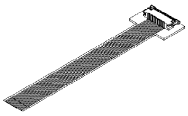
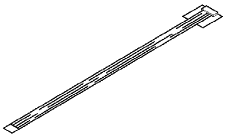
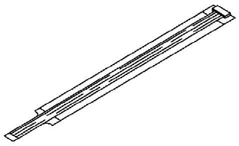
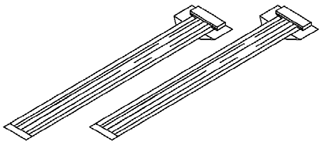
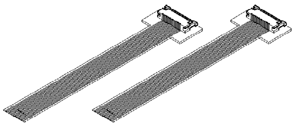
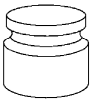
Reassembly Notes:

1. Installation of Lock Lever Unit

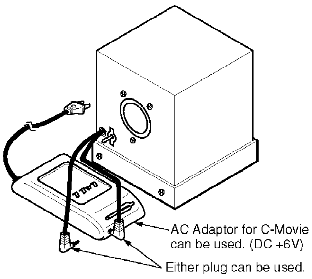
1) Install the Lock Lever Unit so that Pin A and Pin B are inserted to slots on Lock Lever Unit and Guide Pin on chassis is inserted to slot on Lock Lever Unit.

10. ADJUSTMENT PROCEDURES

10.1. SERVICE FIXTURES & TOOLS

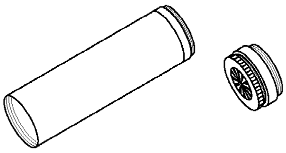
Color Bar Standard Tape VFM3010EDS (Keeping condition: Keep at 18 °C ~ 28 °C) 	**Tape Path Alignment Tape** LSVQ0041 	**DVC Head Cleaning Tape** VFK1451 
Plier for Non ZIF Connector LSVQ0028 	**Capstan Tilt Adjustment Tool** LSVQ0020 	**Grease** LSZG0030
Extension Cable 14P VFKW0124A 	**Extension Cable 22P** VUVS0012 	**Extension Cable 18P** LSUA0017 
Extension Cable 10P LSUA0016 	**Extension Cable 12P** VUVS0007 	**Extension Cable 28P (2 pcs)** VUVS0015 
Extension Cable 20P (2 pcs) LSUA0020 	**Grease** VFKS0081 	

Light Box and AC Adaptor VFK1164LBX1

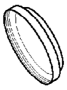


(AC Adaptor is not supplied)

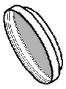
Infinity Lens (with Focus Chart) VFK1164TCM02



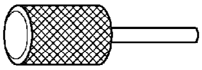
27mm Ring VFK1164TAR27



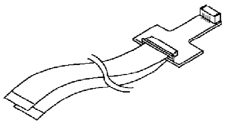
Color Conversion Filter (C14) VFK1164TFCT2



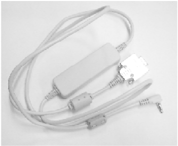
Post Height Adjustment Fixture LSVQ0021



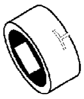
Camera Connecting Cable LSUP0017



232C(M3) I/F Cable VFK1395



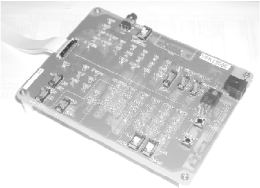
White Chart VFK1164TFWC2



Color Bar Chart VFK1164TFCB2

Gray Scale Chart VFK1164TFGS2

Measuring Board for Electrical Adjustment VFK1308E



DC Output Cable and AC Adaptor VJA0941

(AC Adaptor is not supplied)

10.2. MECHANICAL ADJUSTMENT

10.2.1. Comparison between adjustment items and replacement parts

Replacement Parts Adjustment Items	TENSION ARM UNIT	CAPSTAN UNIT	PINCH ARM UNIT	CYLINDER UNIT	CYLINDER BASE UNIT	S POST UNIT	T POST UNIT	MECHANISM CHASSIS ASS'Y
TENSION POST ADJUSTMENT	○							
CAPSTAN TILT ADJUSTMENT		○						
T4 POST HEIGHT CONFIRMATION			○					
ENVELOPE OUTPUT ADJUSTMENT				○	○	○	○	○

10.2.2. TENSION POST ADJUSTMENT

Purpose:

To maintain a constant tape tension so that the tape runs with stability.

Symptom of Misadjustment:

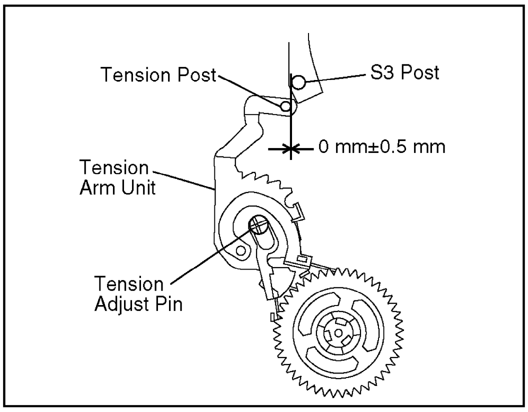
1. **If the adjusted value is below the specification, the tape tension is not sufficient, thus causing a tape slack.**
2. **If the adjusted value is above the specification, the tape tension is too high, thus causing tape damage.**

Equipment Required:

Flat Headed (-) Screwdriver (Purchase Locally)

1. **Without cassette tape, place the Mechanism in the PLAY Position (the Tension Post goes to the most left side) by applying DC Power Supply (3 V) to the Loading Motor terminal.**
2. **Confirm that there is a space of 0 mm±0.5 mm between the right edge of the Tension Post and the left edge of the S3 Post. If not, with Flat Headed (-) Screwdriver, adjust the Tension Adjust Pin so that the space of 0 mm±0.5 mm is made.**

Fig. T1


Tension Post
S3 Post
0 mm±0.5 mm
Tension Arm Unit
Tension Adjust Pin

10.2.3. CAPSTAN TILT ADJUSTMENT

Purpose:

To adjust the tilt of the Capstan Shaft properly.

Symptom of Misadjustment:

If the tilt of the Capstan Shaft is poorly adjusted, the tape might be damaged.

Equipment Required:

Capstan Tilt Adjustment Tool (LSVQ0020)

1. **Set the Capstan Tilt Adjustment Tool between Capstan Unit and Chassis.**

Fig. T2-1

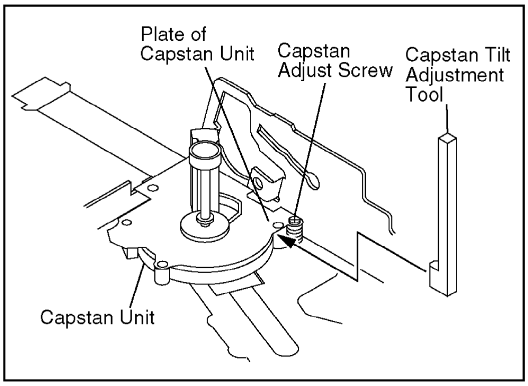
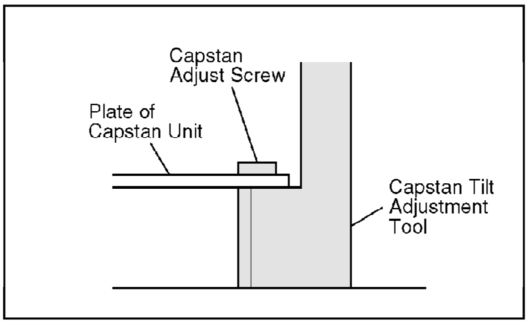


Plate of Capstan Unit
Capstan Adjust Screw
Capstan Tilt Adjustment Tool
Capstan Unit

2. **Tighten the Capstan Adjust Screw so that the plate of Capstan Unit just touches to the Capstan Tilt Adjustment Tool.**

Fig. T2-2


Capstan Adjust Screw
Plate of Capstan Unit
Capstan Tilt Adjustment Tool

10.2.4. T4 POST HEIGHT CONFIRMATION

Purpose:

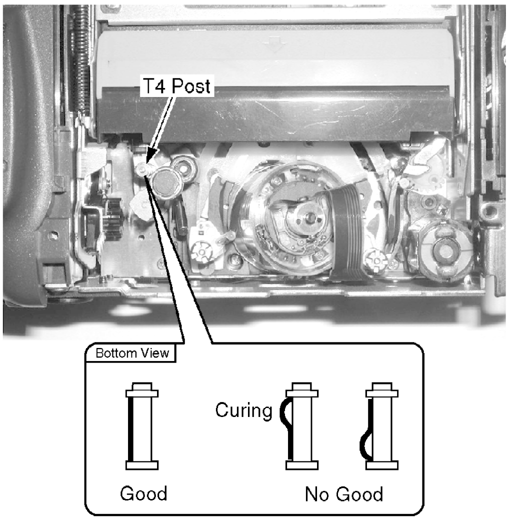
To confirm so that the height of the T4 Post is proper.

Symptom:

If the height of the T4 Post is incorrect, the tape might be damaged.

1. **To remove the Cassette Cover Unit and the Bottom Case, refer to "Disassembly Method" of "CABINET SECTION" in DISASSEMBLY/ ASSEMBLY PROCEDURES.**
2. **Insert the tape without the Cassette Cover.**
3. **Confirm that the tape travels without curing at T4 post in both PLAY and REVIEW modes. If curing is apparent, replace the Pinch Arm Unit.**

Fig. T3-1

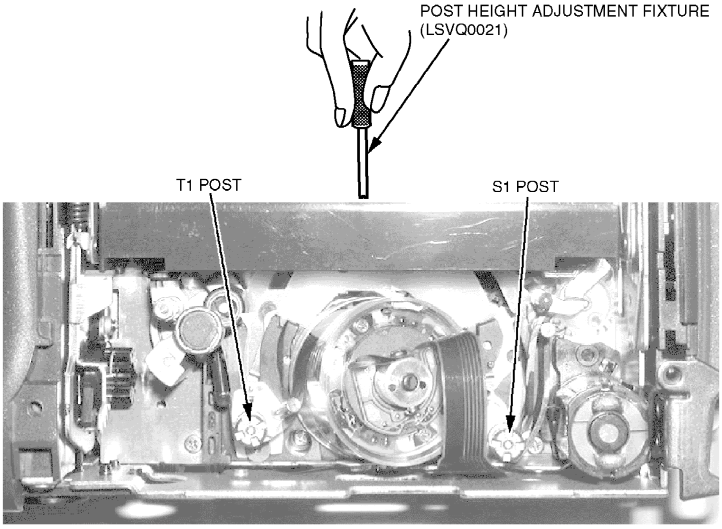

T4 Post
Bottom View
Curing
Good
No Good

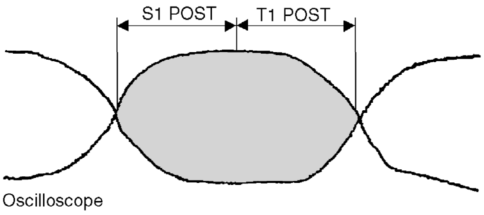
10.2.5. ENVELOPE OUTPUT ADJUSTMENT

1. **Connect the Camcorder and the Measuring Board with Camera**

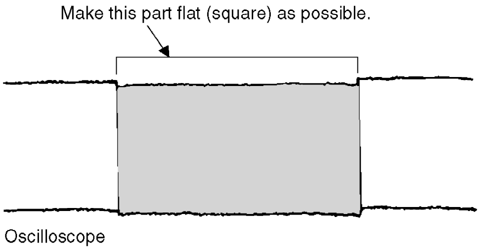
Connecting Cable.

2. **Connect the oscilloscope to "Envelope TP" on the Measuring Board.**
3. **Playback the Tape Path Alignment Tape (LSVQ0041).**
4. **Adjust the S1 post by turning the top of post with Post Height Adjustment Fixture (LSVQ0021) so that the left half of envelope signal becomes flat as possible.**
5. **Adjust the T1 post by turning the top of post with Post Height Adjustment Fixture (LSVQ0021) so that the right half of envelope signal becomes flat as possible.**


POST HEIGHT ADJUSTMENT FIXTURE
(LSVQ0021)
T1 POST
S1 POST


S1 POST
T1 POST
Oscilloscope

Before Adj.


Make this part flat (square) as possible.
Oscilloscope

After Adj.

Note:
After the adjustment, be sure to confirm BER (Bit Error Ratio) using EVR Adjustment Software.
If it is NG, try this adjustment once again.

10.3. ELECTRICAL ADJUSTMENT

10.3.1. INITIAL GUIDELINE

The table below shows which adjustments are necessary according to the unit parts and individual parts to be replaced. Make sure to perform these adjustments shown below as necessary.

Adjustment Item	Replacement Parts	MAIN C.B.A.	IC301 (CAMERA SIGNAL PROCESS)	IC703 (IRIS DRIVE)	IC901(EVF SIGNAL PROCESS)	IC3001 (CAMERA DIGITAL SIGNAL PROCESS/SHUFFLING)	IC3002 (VIDEO/AUDIO SIGNAL PROCESS)	IC6001 (SYSTEM MICROCONTROLLER)	IC6007 (EEPROM)	LCD C.B.A.	IC8001(LCD RGB SIGNAL PROCESS)	CCD UNIT	LENS UNIT	CYLINDER UNIT
VIDEO	Sensitivity Adjustment of Tape sensors	○							○					
	PG shifter Adjustment	○							○					○
	Luminance Level Adjustment	○				○	○		○					
	Color Level Adjustment	○				○	○		○					
Camera	Hall Amp Adjustment	○		○				○	○				○	
	Pixel Error Interpolation for CCD	○							○			○		
	Zoom tracking Adjustment	○							○				○	
	Iris PWM Adjustment	○		○				○	○				○	
	White Balance Adjustment	○	○			○			○			○		
LCD	PLL Adjustment	○							○	○	○			
	Pedestal Level Adjustment	○							○	○	○			
	VCOM Level Adjustment	○							○	○	○			
EVF	PLL Adjustment	○			○				○					
	V1(G) Contrast/Brightness Adjustment	○			○				○					
	V2(R) V3(B) Sub Contrast/Sub Brightness Adjustment	○			○				○					
	Black Limiter Adjustment	○			○				○					
	VCOM Adjustment	○			○				○					

Note: ○ : Adjustment Item

10.3.2. TEST EQUIPMENT

1. Dual-Trace Oscilloscope

Voltage Range: 0.001 to 50 V/Div.
Frequency Range: DC to 50 MHz
Probes: 10:1, 1:1

2. Frequency Counter

3. Vectorscope

4. Plastic Tip Driver

5. Personal Computer

PC: IBM PC/AT or compatible
OS: Microsoft ® Windows ® 95 - Windows ® XP
CPU: 486 or higher
Drive: 3.5 inch 1.44 MB floppy disk drive
Port: D-Sub-9-pin Serial or D-Sub-25-pin Serial
Monitor: VGA Color

6. PC-EVR Adjustment Program (VF0D2003DV10)

Note:

Ask latest version when placing order for PC-EVR Adjustment

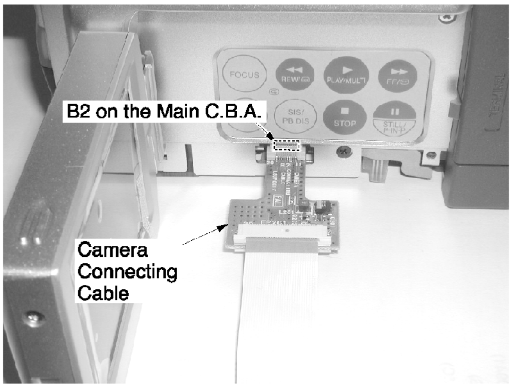
program.

7. Measuring Board (VFK1308E)
8. 232C (M3) I/F Cable (VFK1395)
9. Camera Connecting Cable (LSUP0017)
10. DC Output Cable and AC Adaptor (VJA0941)
11. Color Bar Standard Tape (VFM3010EDS)
    (Keeping condition: Keep at 18 °C ~ 28 °C)
12. Gray Scale Chart (VFK1164TFGS2)
13. White Chart (VFK1164TFWC2)
14. Color Bar Chart (VFK1164TFCB2)
15. Light Box and AC Adaptor (for VHS-C)
16. Infinity Lens (with Focus Chart) (VFK1164TCM02)
17. AC Adaptor (for DVC)
18. 27 mm Ring (VFK1164TAR27)
19. Color Conversion Filter (C14) (VFK1164TFCT2)

10.3.3. PREPARATION

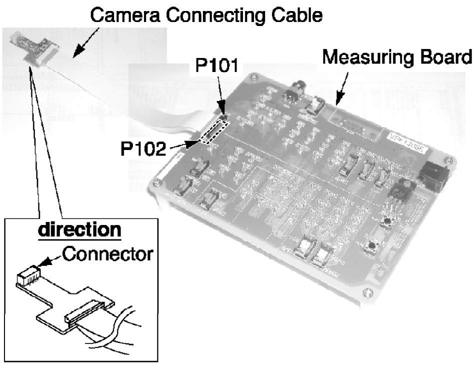
1. Remove the Bottom Case. Refer to "CABINET SECTION" in DISASSEMBLY/ASSEMBLY PROCEDURES.
2. Connect the Camera Connecting Cable to the Connector B2 on the Main C.B.A.

Fig. E1-1



3. Connect the Camera Connecting Cable to P101 and P102 on the Measuring Board.

Fig. E1-2



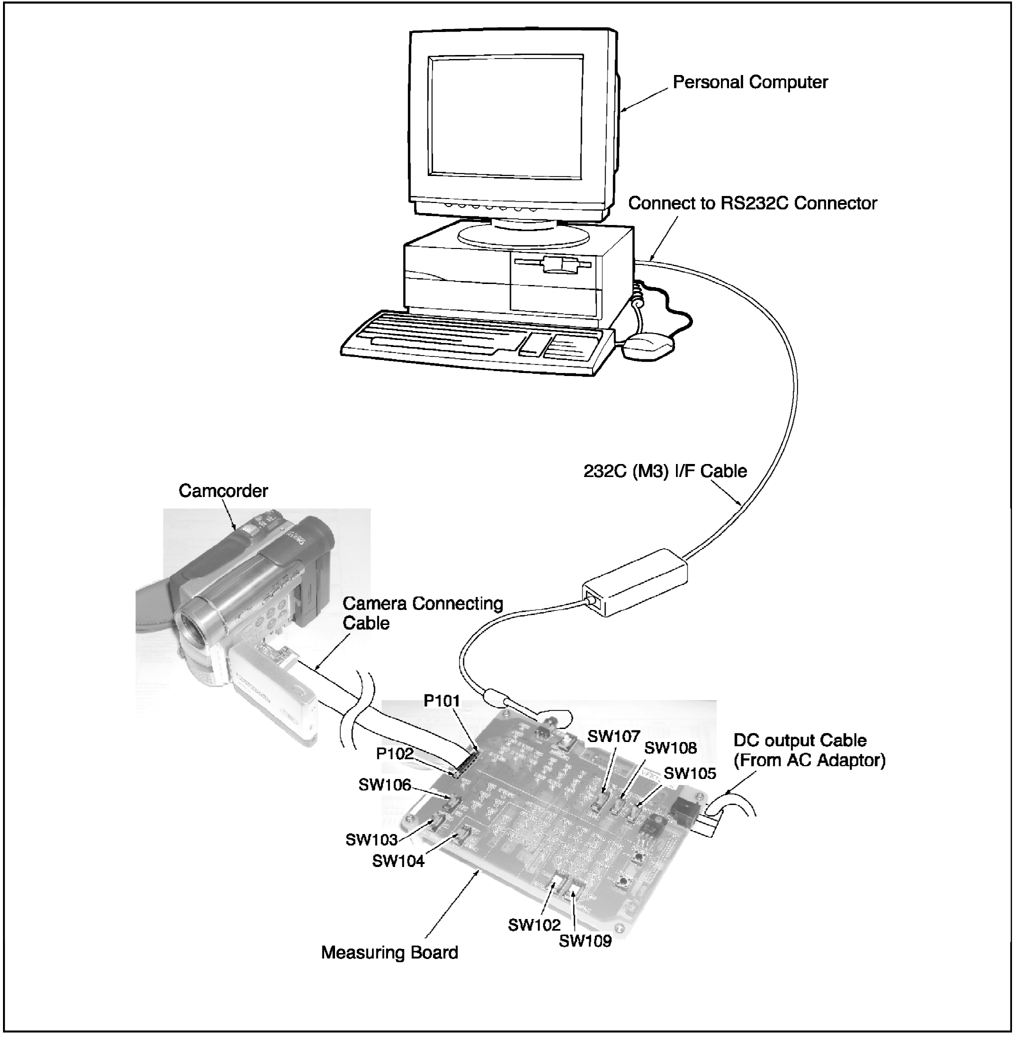
Note:

Install Camera Connecting Cable so that the Connector is upward as shown.

4. **Connect the AC Adaptor to the camcorder.**
5. **Connect the DC Output Cable (and AC Adaptor) to the J101 on the Measuring Board.**
6. **Connect the J102 on the Measuring Board to RS232C of the PC with 232C (M3) I/F Cable.**
7. **Set the SW101 (RS232C_SEL) on the Measuring Board to "M3."**
8. **Set the SW102 (FLUSH1) on the Measuring Board to "NORMAL."**
9. **Set the SW103 (VTR_TEST) on the Measuring Board to "L."**
10. **Set the SW104 (BST_TEST) on the Measuring Board to "NORMAL."**
11. **Set the SW105 on the Measuring Board to "L."**
12. **Set the SW106 on the Measuring Board to "ON."**
13. **Set the SW107 on the Measuring Board to center.**
14. **Set the SW108 on the Measuring Board to "L."**
15. **Set the SW109 (FLUSH2) on the Measuring Board to "FLUSH."**
16. **Power on the set.**

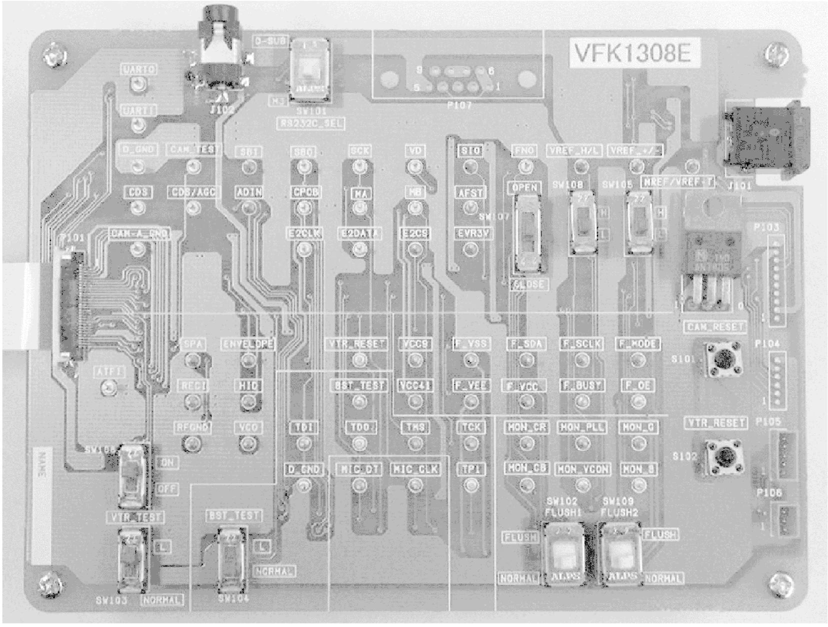
Fig. E1-3

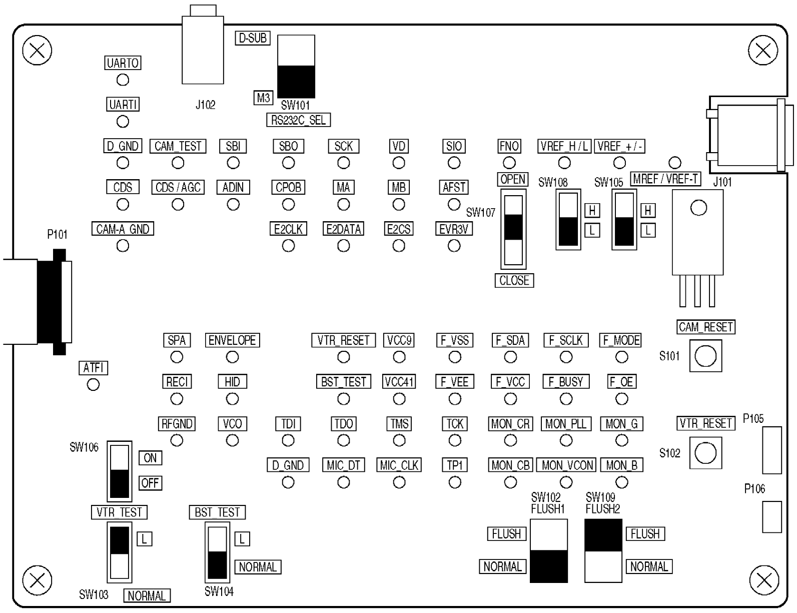
<Computer Assisted Adjustment System>


Personal Computer
Connect to RS232C Connector
232C (M3) I/F Cable
Camcorder
Camera Connecting Cable
P101
P102
SW106
SW103
SW104
SW107
SW108
SW105
DC output Cable (From AC Adaptor)
SW102
SW109
Measuring Board

10.3.4. TP Board Location

Fig. E1-4



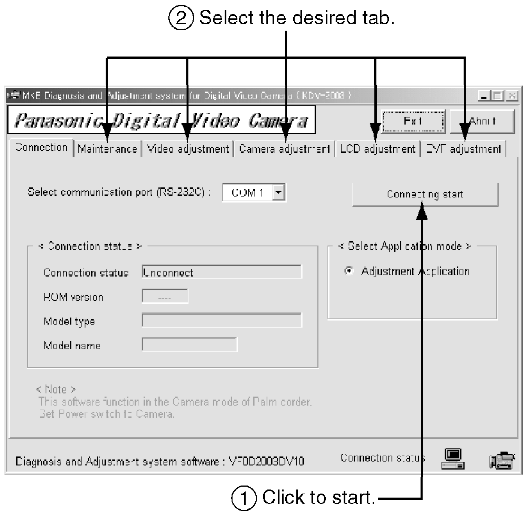

D-SUB
UARTO
UARTI
J102
M3
SW101
RS232C_SEL
D_GND
CAM_TEST
SBI
SBO
SCK
VD
SIO
FNO
VREF_H/L
VREF_+/-
CDS
CDS/AGC
ADIN
CPOB
MA
MB
AFST
OPEN
SW108
SW105
MREF/VREF-T
J101
SW107
H
L
H
L
P101
CAM-A_GND
E2CLK
E2DATA
E2CS
EVR3V
CLOSE
CAM_RESET
SPA
ENVELOPE
VTR_RESET
VCC9
F_VSS
F_SDA
F_SCLK
F_MODE
S101
ATFI
RECI
HID
BST_TEST
VCC41
F_VEE
F_VCC
F_BUSY
F_OE
RFGND
VCO
TDI
TDO
TMS
TCK
MON_CR
MON_PLL
MON_G
VTR_RESET
P105
SW106
S102
ON
OFF
D_GND
MIC_DT
MIC_CLK
TP1
MON_CB
MON_VCON
MON_B
P106
VTR_TEST
BST_TEST
SW102
FLUSH1
SW109
FLUSH2
L
L
FLUSH
FLUSH
NORMAL
NORMAL
NORMAL
SW103
NORMAL
SW104

10.3.5. SET UP OF PC-EVR ADJUSTMENT PROGRAM

1. **Turn on the PC and install the PC-EVR Adjustment Program into the PC.**
2. **Execute the "kdv2003.exe" file by double clicking to start up the PC-EVR Adjustment Program.**
   The main menu display will be displayed.
3. **Click "Connecting start" in the main menu to connect the camcorder.**

4. To perform each adjustment, display the adjustment menu by selecting the desired tab from "Video adjustment," "Camera adjustment," "LCD adjustment" or "EVF adjustment" and select each adjustment item.

Fig. E2



MKE Diagnosis and Adjustment system for Digital Video Camera (KDV-2003)
Panasonic Digital Video Camera
Exit
About
Connection
Maintenance
Video adjustment
Camera adjustment
LCD adjustment
EVF adjustment
Connecting start
< Connection status >
< Select Application mode >

Select communication port (RS-232C) : COM 1

Connection status: Unconnect

ROM version: ----

Model type:

Model name:

● Adjustment Application

< Note >
This software function in the Camera mode of Palm corder.
Set Power switch to Camera.

Diagnosis and Adjustment system software : VF0D2003DV10

Connection status

② Select the desired tab.

① Click to start.

Note:

The adjusted data is stored to the EEPROM IC after each adjustment.

11. SCHEMATIC DIAGRAMS

11.1. SCHEMATIC DIAGRAM & CIRCUIT BOARD LAYOUT NOTES

11.2. LCD SCHEMATIC DIAGRAM

11.3. FRONT SCHEMATIC DIAGRAM

11.4. REAR SCHEMATIC DIAGRAM

11.5. EVF UNIT/VCR OPERATION/CAMERA OPERATION SCHEMATIC DIAGRAMS

11.6. CCD/SIDE CASE L/LCD SW SCHEMATIC DIAGRAMS

11.7. INTERCONNECTION SCHEMATIC DIAGRAM

11.8. VOLTAGE CHART

12. CIRCUIT BOARD LAYOUT

12.1. LCD C.B.A.

13. BLOCK DIAGRAMS

14. TROUBLESHOOTING HINTS

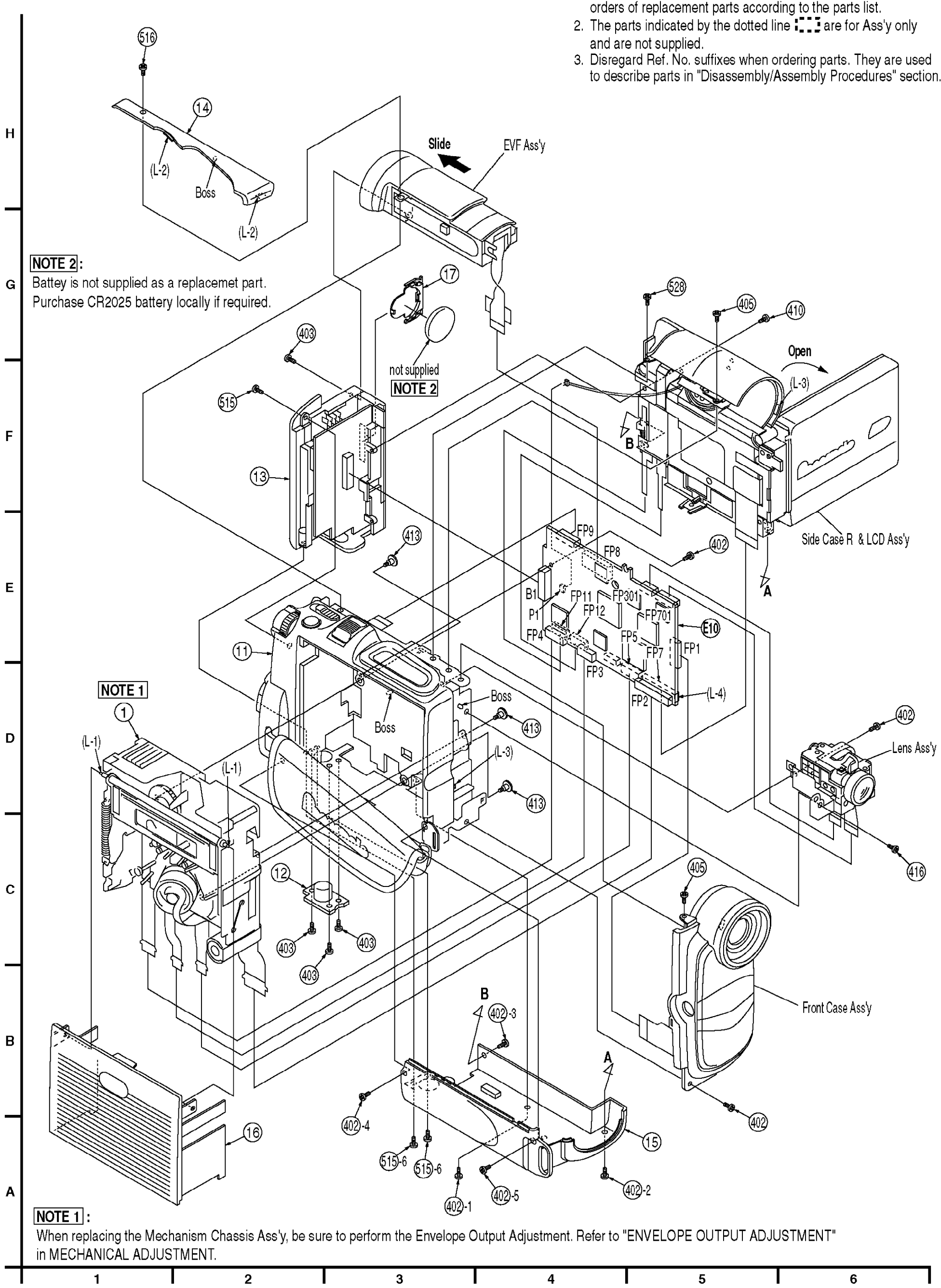
15. EXPLODED VIEWS

15.1. MAIN PARTS SECTION

❶ MAIN PARTS SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⬚ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.


H
G
F
E
D
C
B
A
1
2
3
4
5
6
(516)
⑭
(L-2)
Boss
(L-2)
Slide
EVF Ass'y
⑰
not supplied
NOTE 2
(403)
(515)
⑬
(528)
(405)
(410)
Open
(L-3)
B
Side Case R & LCD Ass'y
A
(413)
FP9
FP8
(402)
B1
P1
FP11
FP12
FP301
FP701
E10
FP4
FP5
FP7
FP1
FP3
FP2
(L-4)
⑪
Boss
Boss
(413)
(L-3)
(413)
NOTE 1
①
(L-1)
(L-1)
(402)
Lens Ass'y
(416)
⑫
(403)
(403)
(403)
(405)
Front Case Ass'y
B
(402)-3
A
(402)-4
(515)-6
(515)-6
(402)-1
(402)-5
⑮
(402)-2
(402)
⑯

NOTE 2 :
Battey is not supplied as a replacemet part.
Purchase CR2025 battery locally if required.

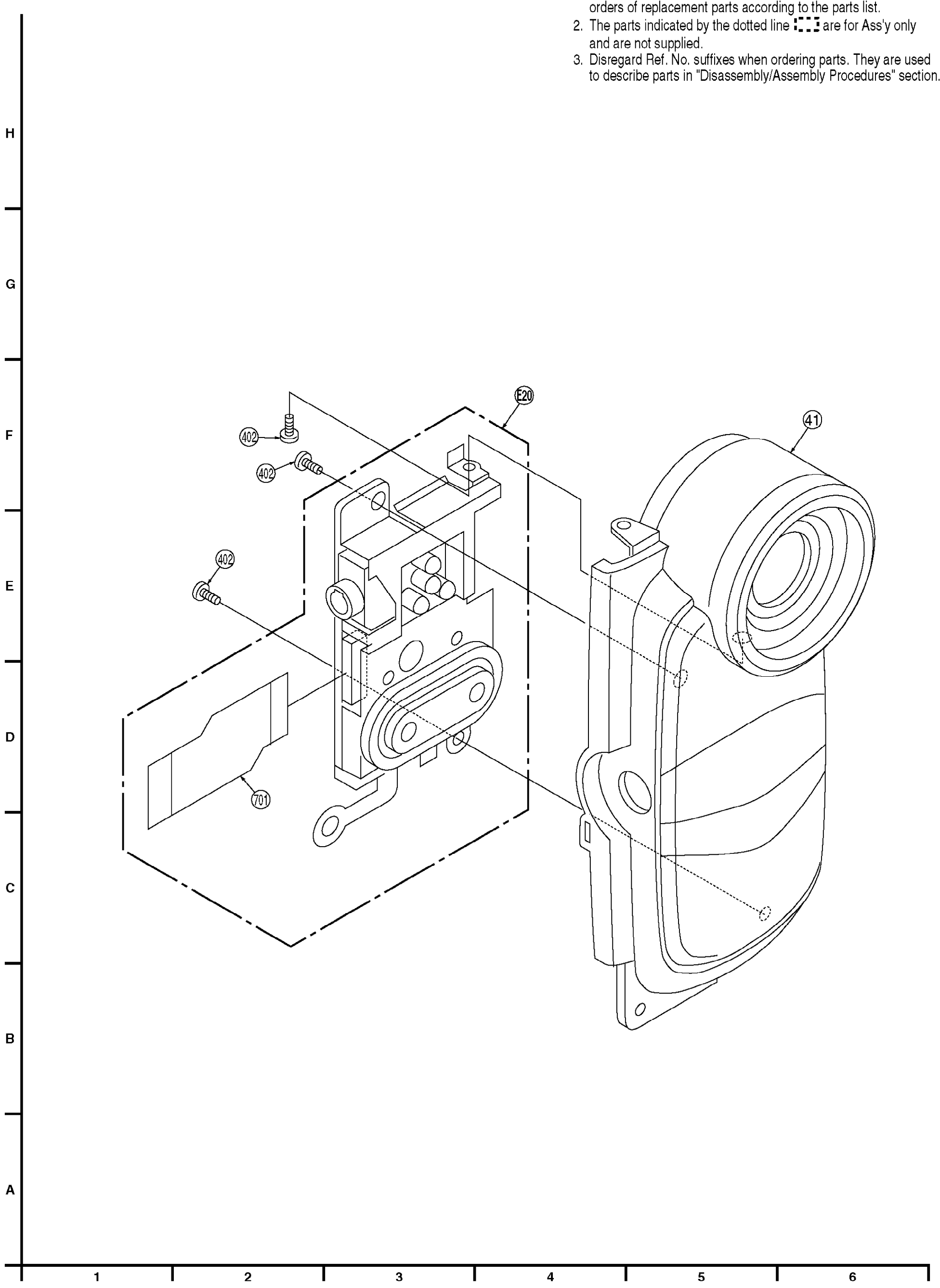
NOTE 1 :
When replacing the Mechanism Chassis Ass'y, be sure to perform the Envelope Output Adjustment. Refer to "ENVELOPE OUTPUT ADJUSTMENT" in MECHANICAL ADJUSTMENT.

15.2. FRONT CASE SECTION

❷ FRONT CASE SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⬚ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.



15.3. CCD AND LENS SECTION

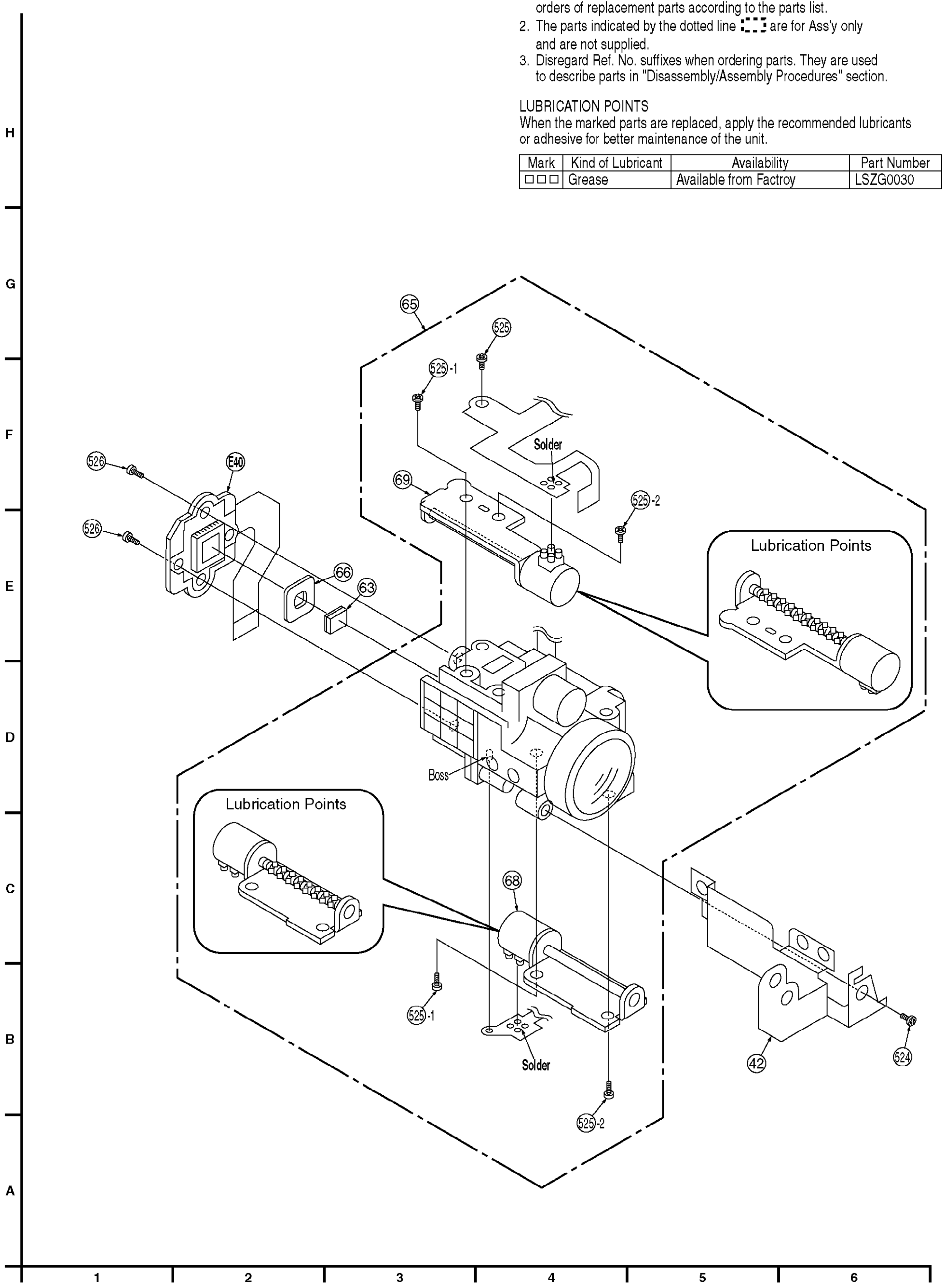
❸ CCD AND LENS SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⬚ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

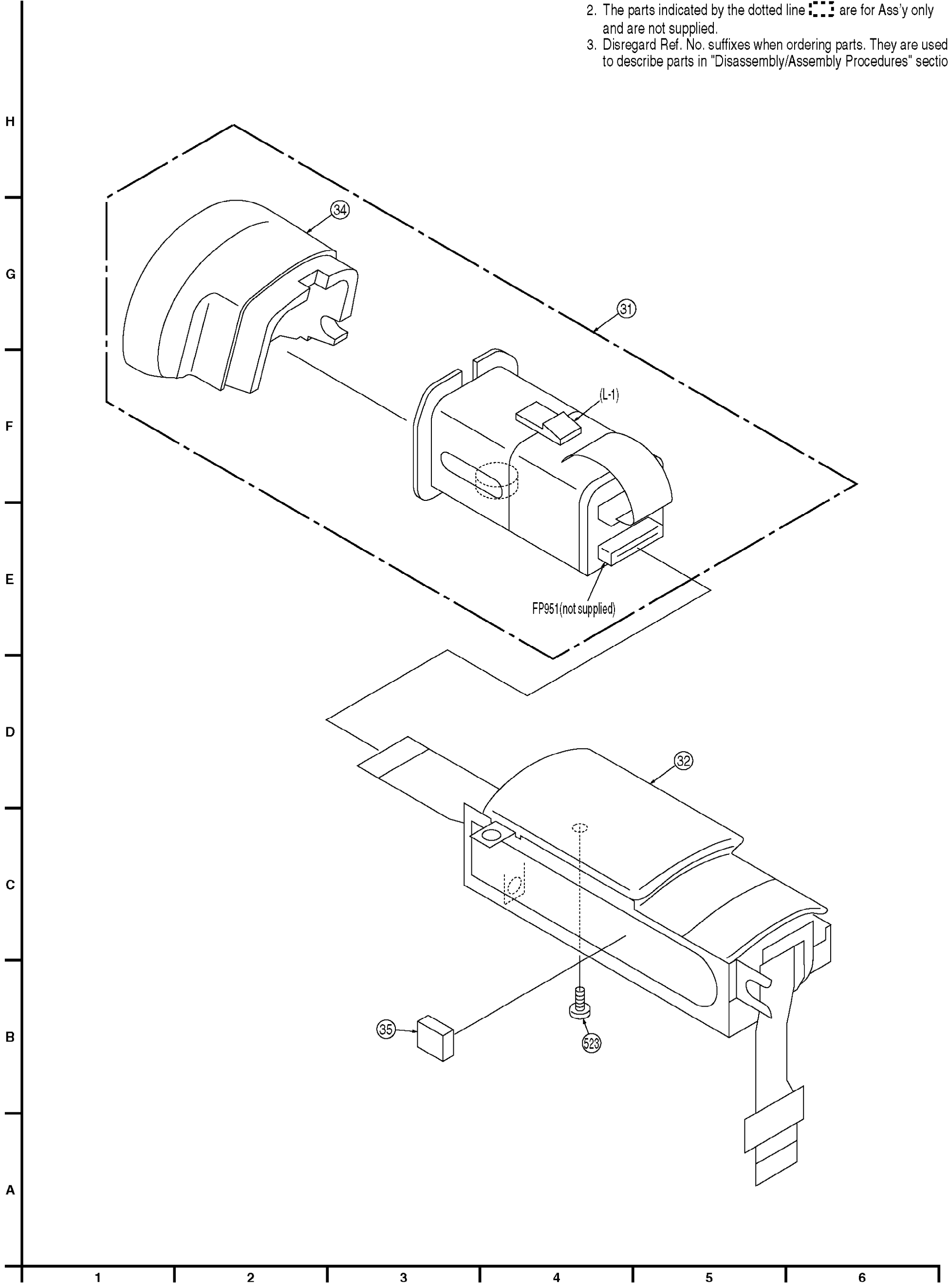
Mark	Kind of Lubricant	Availability	Part Number
□□□	Grease	Available from Factroy	LSZG0030


H
G
F
E
D
C
B
A
1
2
3
4
5
6
65
525
525-1
Solder
69
525-2
526
E40
526
66
63
Lubrication Points
Boss
Lubrication Points
68
525-1
Solder
525-2
42
524

15.4. EVF SECTION

❹ EVF SECTION

Note:
1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ┄ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.

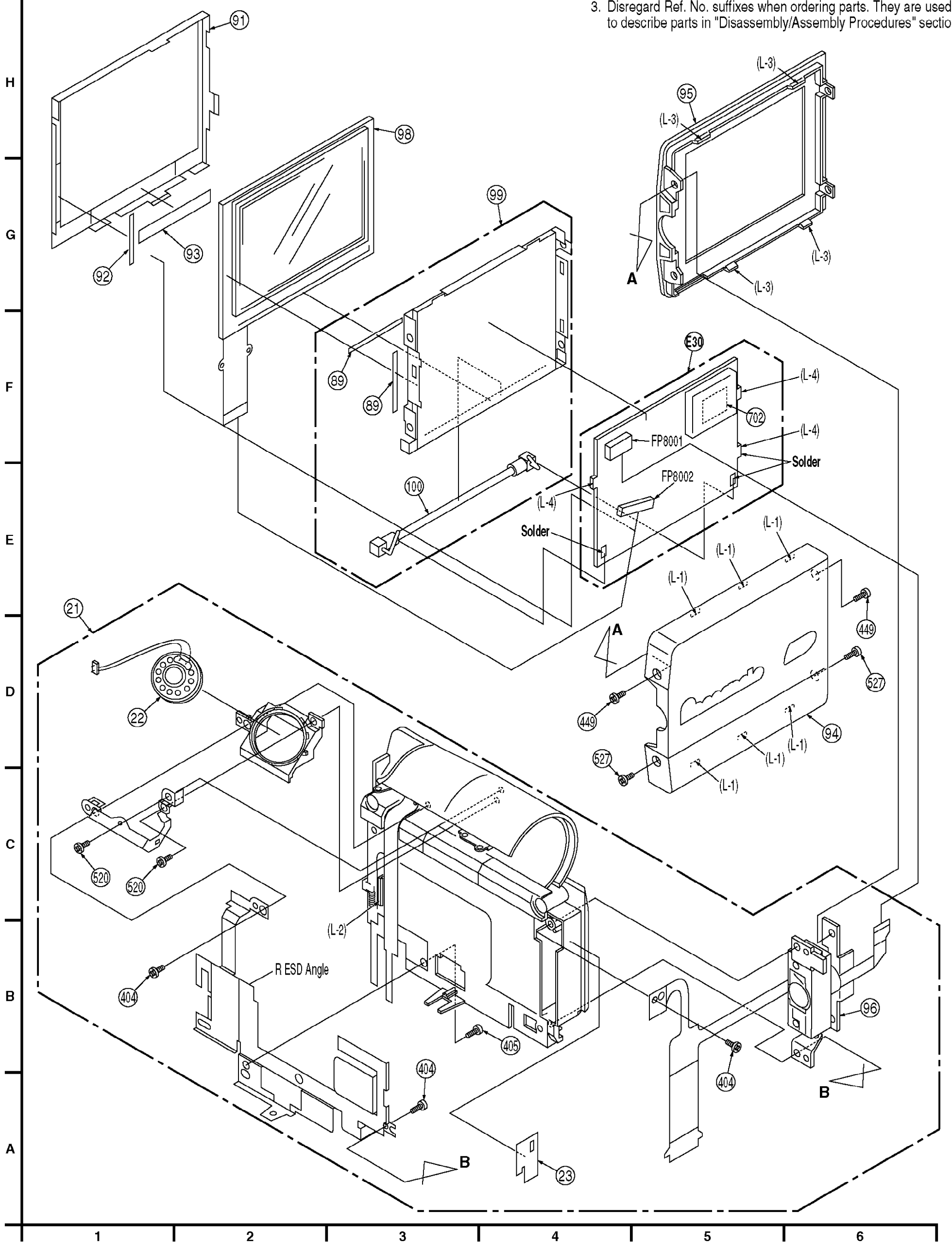

H
G
F
E
D
C
B
A
34
31
(L-1)
FP951(not supplied)
32
35
523
1
2
3
4
5
6

15.5. SIDE CASE R AND LCD SECTION

❺ SIDE CASE R AND LCD SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⁞⁚⁞ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.



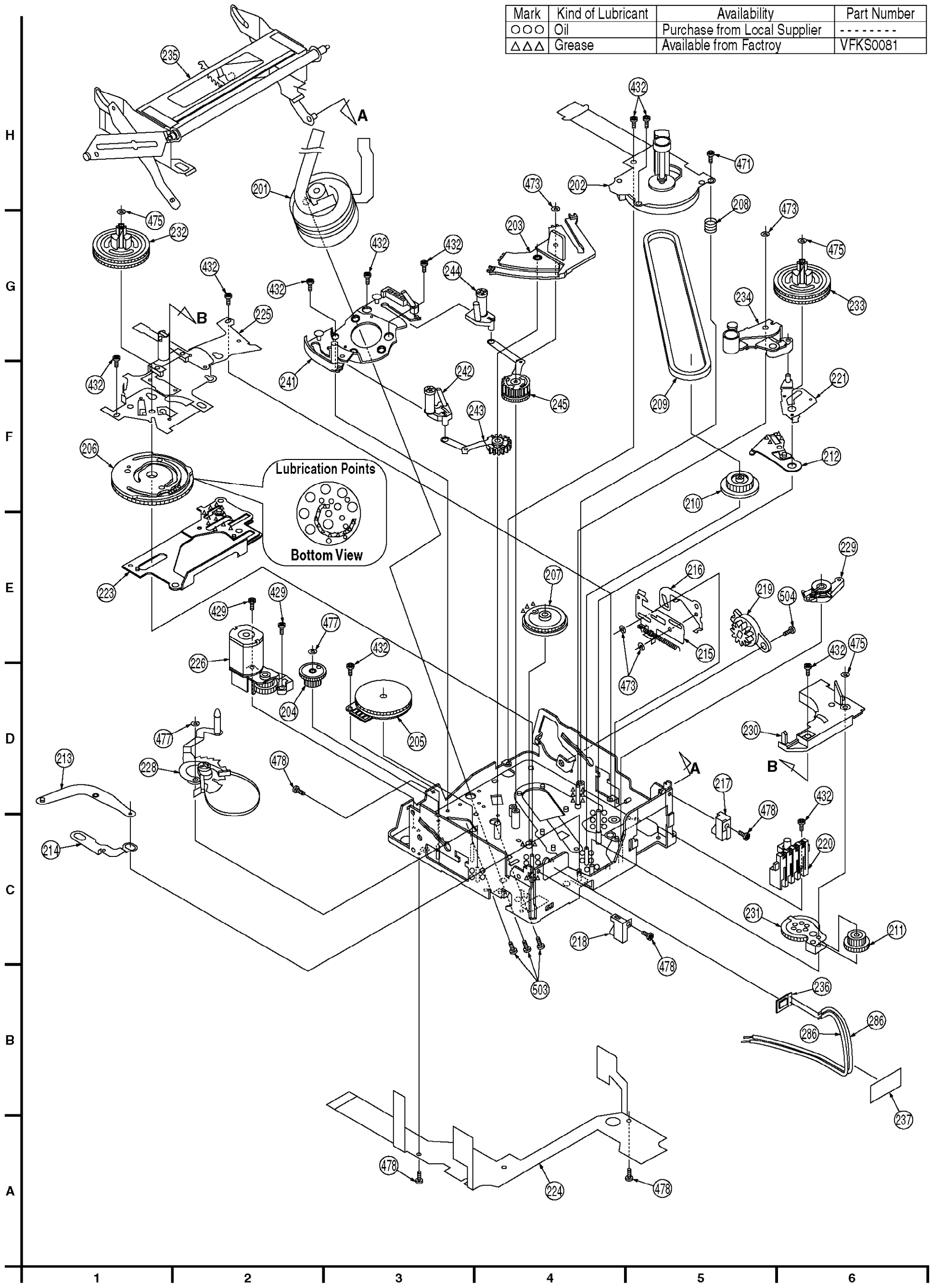
H
G
F
E
D
C
B
A
1
2
3
4
5
6
91
98
92
93
99
89
89
100
95
(L-3)
(L-3)
(L-3)
(L-3)
A
E30
(L-4)
702
(L-4)
FP8001
FP8002
Solder
(L-4)
Solder
(L-1)
(L-1)
(L-1)
A
449
527
449
527
94
(L-1)
(L-1)
(L-1)
21
22
520
520
(L-2)
R ESD Angle
404
405
404
404
96
B
B
23

15.6. MECHANISM SECTION

❻ MECHANISM SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

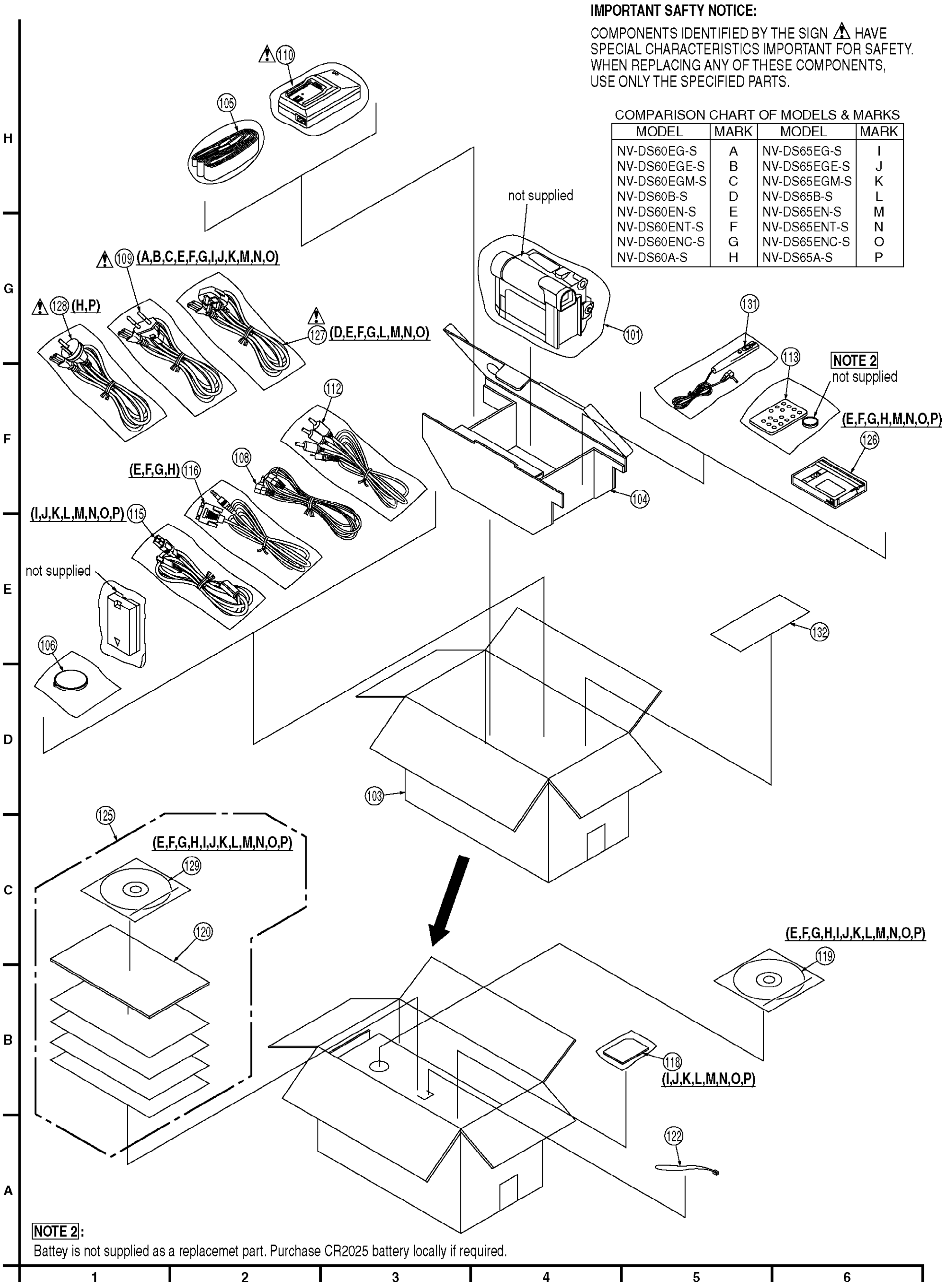
Mark	Kind of Lubricant	Availability	Part Number
○○○	Oil	Purchase from Local Supplier	--------
△△△	Grease	Available from Factroy	VFKS0081



H
G
F
E
D
C
B
A
1
2
3
4
5
6
235
A
201
432
473
202
471
208
473
475
232
203
475
233
432
432
244
432
432
B
225
234
241
242
245
209
221
432
243
212
206
Lubrication Points
Bottom View
210
229
223
207
216
219
504
429
429
215
477
432
475
226
432
473
204
205
230
477
213
478
A
B
228
217
432
478
220
214
231
211
218
478
503
236
286
286
237
478
224
478

15.7. PACKING PARTS AND ACCESSORIES SECTION

❼ PACKING PARTS AND ACCESSORIES SECTION



H
G
F
E
D
C
B
A
1
2
3
4
5
6
⚠110
105
not supplied
⚠109 (A,B,C,E,F,G,I,J,K,M,N,O)
⚠128 (H,P)
⚠127 (D,E,F,G,L,M,N,O)
101
131
113
NOTE 2
not supplied
(E,F,G,H,M,N,O,P)
126
112
108
(E,F,G,H) 116
(I,J,K,L,M,N,O,P) 115
104
not supplied
106
132
103
125
(E,F,G,H,I,J,K,L,M,N,O,P)
129
120
(E,F,G,H,I,J,K,L,M,N,O,P)
119
118
(I,J,K,L,M,N,O,P)
122

IMPORTANT SAFTY NOTICE:

COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P

NOTE 2:
Battey is not supplied as a replacemet part. Purchase CR2025 battery locally if required.

16. REPLACEMENT PARTS LISTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

16.1. REPLACEMENT NOTES

16.1.1. General Notes

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use

only original replacement parts which are listed with their part numbers in the parts list.

2. IMPORTANT SAFETY NOTICE
   Components identified by the sign ⚠ have special characteristics important for safety. When replacing any of these components, use only the specified parts.
3. SPECIAL NOTE
   All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.
4. Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
5. Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.
6. Definition of Parts supplier:
   A. Parts with mark "SPC" in the Remarks column are supplied from Spare Parts Center of Panasonic AVC Company.
   B. Parts without mark in the Remarks column are supplied from MKE.
7. Item numbers with capital letter E (Example: E10, E20,...) in the Ref. No. column are shown in the exploded views.
8. Parts whose Ref. Nos. are the same are interchangeable as replacement parts. Any of these parts may be ordered and used as a replacement part.

16.1.2. Mechanical Replacement Notes

1. Section No. of parts shown in Exploded Views are indicated in the Remarks column.
2. Abbreviation
   RTL: Retention Time Limited
   This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be

available.

3. Cut Washers (Ref No. 473, 475, and 477) are not reusable. If removed, install a new one.

4. Mechanism Chassis Ass'y (Ref. No. 1) replacement note:
When replacing the Mechanism Chassis Ass'y, be sure to perform the Envelope Output Adjustment. Refer to "ENVELOPE OUTPUT ADJUSTMENT" in MECHANICAL ADJUSTMENT.

16.1.3. Electrical Replacement Notes

1. Unless otherwise specified;
All resistors are in Ω, K = 1,000 Ω, M = 1,000 kΩ.

2. Abbreviation
RTL: Retention Time Limited
This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.
NR: Non Repairable Board Ass'y
MGF CHIP: Metal Glaze Film Chip
C CHIP: Ceramic Chip
COMPLX CMP: Complex Component
W FLMPRF: Wirewound Flameproof
C.B.A.: Circuit Board Assembly
P.C.B.: Printed Circuit Board
E.S.D.: Electrostatically Sensitive Devices

3. SERVICE OF CHIP PARTS
When servicing chip parts, please use a soldering iron of less than 30 W.

4. When replacing 0 Ω resistor, a wire can be substituted for it.

16.2. MECHANICAL REPLACEMENT PARTS LIST

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P

Definition of Parts supplier:

1. **Parts with mark "SPC" in the Remarks column are supplied from Spare Parts Center of Panasonic AVC Company.**
2. **Parts without mark in the Remarks column are supplied from MKE.**

MECHANICAL REPLACEMENT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	LSXY0425	MECHANISM CHASSIS ASS'Y	1
11	LSYK1007	SIDE CASE L UNIT,ABS RESIN (A,B,C,D,E,F,G,H)	1
11	LSYK1008	SIDE CASE L UNIT,ABS RESIN (I,J,K,L,M,N,O,P)	1
12	LSHN0016	TRIPOD	1
13	LSYK1012	REAR UNIT (A,B,C,D)	1
13	LSYK1123	REAR UNIT (E,F,G,H)	1
13	LSYK1013	REAR UNIT (I,J,K,L)	1
13	LSYK1124	REAR UNIT (M,N,O,P)	1
14	LSKM0894	TOP PIECE	1
15	LSKM0877	BOTTOM CASE,ABS RESIN	1
16	LSYK1092	CASSETTE COVER UNIT	1
17	LSMD0785	BATTERY HOLDER	1
21	LSYK1081	SIDE CASE R UNIT,ABS RESIN (A,B,C,D)	5
21	LSYK1082	SIDE CASE R UNIT,ABS RESIN (E,F,G,H)	5
21	LSYK1083	SIDE CASE R UNIT,ABE RESIN (I,J,K,L,M,N,O,P)	5
22	LSEQ0674	SPEAKER UNIT	5
23	LSGQ0085	LIGHT SHIELD SHEET	5
31	LSEK0488	EVF MAIN CASE UNIT	4
32	LSYK1090	EVF CASE UNIT,ABS RESIN	4
34	LSMG0117	EYE CAP	4
35	LSMT0381	CUSHION,RUBBER	4
41	LSYK1078	FRONT UNIT	2
42	LSMA0661	LENS ANGLE	3
63	VDL1390	OPTICAL FILTER	3
65	LSXN0028	LENS UNIT (A,B,C,D,E,F,G,H)	3
65	LSXN0027	LENS UNIT (I,J,K,L,M,N,O,P)	3
66	VMX3282	FILTER RUBBER	3
68	L6HA66NC0001	ZOOM MOTOR UNIT	3
69	06SSL6F3NA	FOCUS MOTOR UNIT	3
89	LSMZ0349	BOTH SIDE TAPE	5
91	LSSC0596	LCD PANEL SHELD CASE,STEEL	5
92	LSMZ0339	LCD INSULATION SHEET A	5
93	LSMZ0340	LCD INSULATION SHEET B	5
94	LSYK1086	LCD CASE A UNIT,ABS RESIN (A,B,C,D,E,F,G,H)	5

Ref. No.	Part No.	Part Name & Description	Remarks
94	LSYK1087	LCD CASE A UNIT,ABS RESIN (I,J,K,L,M,N,O,P)	5
95	LSKM0891	LCD CASE B,ABS RESIN	5
96	LSXY0480	SHAFT CASE UNIT	5
98	EDTCA29QJ0	LIQUID CRYSTAL DISPLAY PANEL	5
99	LSXY0472	LEAD LIGHT PANEL UNIT	5
100	LSXY0471	BACK LIGHT UNIT	5
101	VPF1129	BAG,POLYETHYLENE	7
103	LSPG1482	PACKING CASE,PAPER (A,B)	7
103	LSPG1483	PACKING CASE,PAPER (C)	7
103	LSPG1484	PACKING CASE,PAPER (D)	7
103	LSPG1485	PACKING CASE,PAPER (E,F,G,H)	7
103	LSPG1486	PACKING CASE,PAPER (I,J)	7
103	LSPG1487	PACKING CASE,PAPER (K)	7
103	LSPG1488	PACKING CASE,PAPER (L)	7
103	LSPG1489	PACKING CASE,PAPER (M,N,O,P)	7
104	LSTG1297	DVC PACKING	7
105	VFC3506-1A	SHOULDER STRAP	7
106	LSYF0535	LENS CAP UNIT	7
108	LSJA0288	DC CABLE W/PLUG	7
109	K2CR2DA00004	AC CORD W/PLUG (A,B,C,E,F,G,I,J,K,M,N,O)	⚠ 7
109	K2CQ2DA00003	AC CORD W/PLUG (A,B,C,E,F,G,I,J,K,M,N,O)	⚠ 7
109	K2CQ2DA00002	AC CORD W/PLUG (A,B,C,E,F,G,I,J,K,M,N,O)	⚠ 7
110	DE-855AB	AC ADAPTOR UNIT	⚠ 7
112	LSJA0280	AUDIO/VIDEO CABLE W/PLUG	7
113	LSSQ0336	INFRARED REMOTE CONTROL UNIT	7
115	K1HA05CD0001	USB CABLE W/PLUG (I,J,K,L,M,N,O,P)	7
116	K1HB09BZ0001	PC CONNECTION CABLE W/PLUG (E,F,G,H)	7
118	RP-SD008BMK0	SD CARD (I,J,K,L,M,N,O,P)	7
119	LSFT0494	APPLICATION SOFTWARE CD-ROM (E,F,G,H)	7
119	LSFT0531	APPLICATION SOFTWARE CD-ROM (I,J,K,L,M,N,O,P)	7
120	LSQT0679B	INSTRUCTION BOOK (A,I)	⚠ 7
120	LSQT0683B	INSTRUCTION BOOK (B,J)	⚠ 7
120	LSQT0680B	INSTRUCTION BOOK (C,K)	⚠ 7
120	LSQT0681A	INSTRUCTION BOOK (D,L)	⚠ 7
120	LSQT0682B	INSTRUCTION BOOK (E,F,G,M,N,O)	⚠ 7
120	LSQT0684A	INSTRUCTION BOOK (H,P)	⚠ 7
122	LSGQ0066	HOOD STRAP	7
125	LSQF0679	FAN BAG (A)	7
125	LSQF0683	FAN BAG (B)	7
125	LSQF0680	FAN BAG (C)	7
125	LSQF0681	FAN BAG (D)	7
125	LSQF0682	FAN BAG (E,F,G)	7
125	LSQF0684	FAN BAG (H)	7
125	LSQF0704	FAN BAG (I)	7
125	LSQF0707	FAN BAG (J)	7
125	LSQF0705	FAN BAG (K)	7
125	LSQF0706	FAN BAG (L)	7
125	LSQF0691	FAN BAG (M,N,O)	7
125	LSQF0692	FAN BAG (P)	7
126	VFK1451	CLEANING CASSETTE (E,F,G,H,M,N,O,P)	7
127	VJA0940	AC CORD W/PLUG (D,E,F,G,L,M,N,O)	⚠ 7
128	K2CJ2DA00002	AC CORD W/PLUG (H,P)	⚠ 7

Ref. No.	Part No.	Part Name & Description	Remarks
128	VJA1068	AC CORD W/PLUG (H,P)	⚠ 7
129	VQT9696	INSTRUCTION BOOK CD-ROM (E,F,G)	7
129	VQT9697	INSTRUCTION BOOK CD-ROM (H)	7
129	LSQT0689A	INSTRUCTION BOOK CD-ROM (M,N,O)	7
129	LSQT0690A	INSTRUCTION BOOK CD-ROM (L,P)	7
129	LSQT0695A	INSTRUCTION BOOK CD-ROM (I)	7
129	LSQT0696A	INSTRUCTION BOOK CD-ROM (K)	7
129	LSQT0697A	INSTRUCTION BOOK CD-ROM (J)	7
131	N2QCAD000002	UNIVERSAL REMOTE CONTROLLER	7
132	LSQC0329	USB CAUTION SHEET	7
201	LSEG0083	CYLINDER UNIT	6
202	LSEM0086	CAPSTAN UNIT	6
203	LSMD0185	RAIL	6
204	LSDG0092	REDUCTION GEAR B	6
205	LSSR0004	MODE SWITCH	6
206	LSDG0093	CAM GEAR	6
207	LSDG0094	INTERMEDIATE GEAR	6
208	LSMB0180	CAPSTAN ADJUST SPRING	6
209	LSDV0012	TIMING BELT	6
210	LSDG0095	DRIVE PULLEY	6
211	LSDG0096	CENTER GEAR	6
212	LSMA0364	T4 DRIVE ARM	6
213	LSML0099	TENSION DRIVE ARM	6
214	LSML0100	S BRAKE DRIVE LEVER	6
215	VXLS1122	LOCK LEVER UNIT	6
216	LSML0102	LOCK PICK LEVER	6
217	LSMD0186	GUIDE PIECE R	6
218	LSMD0187	GUIDE PIECE L	6
219	LSXP0018	DAMPER UNIT	6
220	LSSH0001	MEMORY IN CASSETTE SWITCH	6
221	LSMA0365	PINCH DRIVE ARM	6
223	VXLS1115	MAIN PLATE UNIT	6
224	LSEK0501	MECHANISM FLEXIBLE PRINTED CIRCUIT UNIT	6
225	LSEK0503	SENSOR FLEXIBLE PRINTED CIRCUIT UNIT	6
226	LSEM0087	LOADING MOTOR UNIT	6
228	VXLS1116	TENSION ARM UNIT	6
229	LSXL0085	T BRAKE UNIT	6
230	VXDS0215	MECHANISM COVER UNIT	6
231	VXLS1084	IDLER ARM UNIT	6
232	LSXR0002	S REEL TABLE	6
233	LSXR0003	T REEL TABLE	6
234	VXLS1123	PINCH ARM UNIT	6
235	VXAS4418	GARAGE UNIT	6
236	LSJB8181	DEW SENSOR	6
237	VMFW0045	SHEET,NYLON-RAYON	6
241	LSXD0017	CYLINDER BASE UNIT	6
242	LSXD0021	S POST UNIT	6
242	VXDS0210	S POST UNIT	6
243	VXLS1118	S ARM UNIT	6
244	LSXD0020	T POST UNIT	6
244	VXDS0209	T POST UNIT	6
245	VXLS1119	T ARM UNIT	6
286	LSEU03B55UU	DEW CABLE W/OUT PLUG,1V	6
402	XQN2+BJ4FXK	SCREW,STEEL	1,2

Ref. No.	Part No.	Part Name & Description	Remarks
403	XQN2+BF4FXK	SCREW,STEEL	1
404	XQN2+BJ5FXK	SCREW,STEEL	5
405	XQN2+BF3FXK	SCREW,STEEL	1,5
410	XQN2+BJ4FN	SCREW,STEEL	1
413	LSHD0051	SCREW,STEEL	1
416	XQN2+BJ3FXK	SCREW,STEEL	1
429	XQN14+B35	SCREW,STEEL	6
432	XQN14+B2	SCREW,STEEL	6
449	XQN16+BF5FN	SCREW,STEEL	5
471	XQN14+B35FNK	SCREW,STEEL	6
473	VMX2026	CUT WASHER,STEEL	6
475	VMX2750	CUT WASHER,STEEL	6
477	VMX2028	CUT WASHER,STEEL	6
478	XQN14+B12FN	SCREW,STEEL	6
503	LSHD0073	SCREW,STEEL	6
504	XQN2+B35	SCREW,STEEL	6
515	XQN2+BJ6FXK	SCREW,STEEL	1
516	XQN2+AF4FN	SCREW,STEEL	1
520	XQN2+BJ4FU	SCREW,STEEL	5
523	LSHD0087	SCREW,STEEL	4
524	XQN16+BJ4FXK	SCREW,STEEL	3
525	XQN16+CJ4	SCREW,STEEL	3
526	XQN16+AJ4	SCREW,STEEL	3
527	XQN16+BF5FXK	SCREW,STEEL	5
528	XQN2+AF2FXK	SCREW,STEEL	1
701	LSJB8219	FRONT FLEXIBLE PRINTED CIRCUIT	2
702	LSMZ0341	INSULATION SHEET,PLASTIC	5
E10	LSEP8214P1	MAIN C.B.A. (A,B,C,D)	1
E10	LSEP8214Q1	MAIN C.B.A. (E,F,G,H)	1
E10	LSEP8226P1	MAIN C.B.A. (I,J,K,L)	1
E10	LSEP8226Q1	MAIN C.B.A. (M,N,O,P)	1
E20	LSXM0028	FRONT C.B.A. NR	2
E30	LSEP8218B1	LIQUID CRYSTAL DISPLAY C.B.A.	5 RTL
E40	LSEQ0661	CCD C.B.A. NR	3

SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
	VFM3010EDS	COLOR BAR STANDARD TAPE	SPC
	VFK1451	DVC HEAD CLEANING TAPE	SPC
	LSVQ0041	TAPE PATH ALIGNMENT TAPE	
	LSVQ0028	PLIER FOR NON ZIF CONNECTOR	
	VFKW0124A	EXTENSION CABLE 14P	
	VUVS0012	EXTENSION CABLE 22P	
	LSUA0017	EXTENSION CABLE 18P	
	LSUA0016	EXTENSION CABLE 10P	
	VUVS0007	EXTENSION CABLE 12P	
	VUVS0015	EXTENSION CABLE 28P	
	LSUA0020	EXTENSION CABLE 20P	
	LSVQ0020	CAPSTAN TILT ADJUSTMENT TOOL	
	LSZG0030	GREASE	
	VFKS0081	GREASE	
	VFK1164LBX1	LIGHT BOX	SPC
	VFK1164TCM02	INFINITY LENS (WITH FOCUS CHART)	SPC
	VFK1164TAR27	27mm RING	SPC
	VFK1164TFCT2	COLOR CONVERSION FILTER (C14)	SPC
	LSVQ0021	POST HEIGHT ADJUSTMENT FIXTURE	
	LSUP0017	CAMERA CONNECTING CABLE	
	VFK1395	232C(M3) I/F CABLE	SPC
	VFK1308E	MEASURING BOARD FOR ELECTRICAL ADJUSTMENT	SPC
	VJA0941	DC OUTPUT CABLE	SPC
	VFK1164TFWC2	WHITE CHART	SPC
	VFK1164TFCB2	COLOR BAR CHART	SPC
	VFK1164TFGS2	GRAY SCALE CHART	SPC

16.3. ELECTRICAL REPLACEMENT PARTS LIST

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P

Definition of Parts supplier:

1. All parts are supplied from MKE.

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E10	LSEP8214P1	MAIN C.B.A. (A,B,C,D)	E.S.D.
E10	LSEP8214Q1	MAIN C.B.A. (E,F,G,H)	E.S.D.
E10	LSEP8226P1	MAIN C.B.A. (I,J,K,L)	E.S.D.
E10	LSEP8226Q1	MAIN C.B.A. (M,N,O,P)	E.S.D.
E20	LSXM0028	FRONT C.B.A. NR	
E30	LSEP8218B1	LIQUID CRYSTAL DISPLAY C.B.A.	RTL
E40	LSEQ0661	CCD C.B.A. NR	

16.3.1. MAIN C.B.A.

(Model: A, B, C, D, E, F, G, H)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P

FPC CONNECTORS

Ref. No.	Part No.	Part Name & Description	Remarks
FP1	K1MN16B00115	CONNECTOR 16P	
FP2	K1MN28B00051	CONNECTOR 28P	
FP3	K1MN10B00107	CONNECTOR 10P	
FP4	K1MN18B00104	CONNECTOR 18P	
FP5	K1MN12B00114	CONNECTOR 12P	
FP7	K1MN28B00051	CONNECTOR 28P	
FP8	K1MN22B00087	CONNECTOR 22P	
FP9	K1MN20A00069	CONNECTOR 20P	
FP11	K1MN06B00139	CONNECTOR 6P	
FP12	K1MN06B00140	CONNECTOR 6P	
FP301	K1MN14A00073	CONNECTOR 14P	
FP701	K1MN20A00070	CONNECTOR 20P	

16.3.2. MAIN C.B.A.

(Model: I, J, K, L, M, N, O, P)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P

FPC CONNECTORS

Ref. No.	Part No.	Part Name & Description	Remarks
FP1	K1MN16B00115	CONNECTOR 16P	
FP2	K1MN28B00051	CONNECTOR 28P	
FP3	K1MN10B00107	CONNECTOR 10P	
FP4	K1MN18B00104	CONNECTOR 18P	
FP5	K1MN12B00114	CONNECTOR 12P	
FP7	K1MN28B00051	CONNECTOR 28P	
FP8	K1MN22B00087	CONNECTOR 22P	
FP9	K1MN20A00069	CONNECTOR 20P	
FP11	K1MN06B00139	CONNECTOR 6P	
FP12	K1MN06B00140	CONNECTOR 6P	
FP301	K1MN14A00073	CONNECTOR 14P	
FP701	K1MN20A00070	CONNECTOR 20P	

16.3.3. FRONT C.B.A. NR

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
701	LSJB8219	FRONT FLEXIBLE PRINTED CIRCUIT	

16.3.4. LIQUID CRYSTAL DISPLAY C.B.A.

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC8001	AN2540FHQ-V	IC, LINEAR	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q8001	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8001	B1ABCF000104	TRANSISTOR SI NPN CHIP	
Q8002	2SB1462J08	TRANSISTOR SI PNP CHIP	
Q8002	B1ADCF000072	TRANSISTOR SI PNP CHIP	
Q8003	UNR9212J08	TRANSISTOR SI NPN CHIP	
Q8003	B1GBCFLL0024	TRANSISTOR SI NPN CHIP	
Q8004	2SB1462J08	TRANSISTOR SI PNP CHIP	
Q8004	B1ADCF000072	TRANSISTOR SI PNP CHIP	
Q8005	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8005	B1ABCF000104	TRANSISTOR SI NPN CHIP	
Q8006	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8006	B1ABCF000104	TRANSISTOR SI NPN CHIP	
Q8007	UNR9212J08	TRANSISTOR SI NPN CHIP	
Q8007	B1GBCFLL0024	TRANSISTOR SI NPN CHIP	
Q8008	2SB1462J08	TRANSISTOR SI PNP CHIP	
Q8008	B1ADCF000072	TRANSISTOR SI PNP CHIP	
Q8009	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8009	B1ABCF000104	TRANSISTOR SI NPN CHIP	
Q8010	UNR9114J08	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q8010	B1GDCFJN0017	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q8011	UNR9212J08	TRANSISTOR SI NPN CHIP	
Q8011	B1GBCFLL0024	TRANSISTOR SI NPN CHIP	
Q8012	XP0460100L	COMPLEX COMPORNENT SI NPN CHIP	
Q8012	B1HFCFA00003	TRANSISTOR SI NPN CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
Q8012	B1HFCFA00009	TRANSISTOR SI NPN CHIP	
Q8012	HN1B04FU-GTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q8014	XP0460100L	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q8014	B1HFCFA00003	TRANSISTOR SI NPN CHIP	
Q8014	B1HFCFA00009	TRANSISTOR SI NPN CHIP	
Q8014	HN1B04FU-GTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q8018	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8018	B1ABCF000104	TRANSISTOR SI NPN CHIP	
Q8104	2SD11190RL	TRANSISTOR SI NPN CHIP	
Q8104	B1ABPC000007	TRANSISTOR SI NPN CHIP	
Q8105	2SD11190RL	TRANSISTOR SI NPN CHIP	
Q8105	B1ABPC000007	TRANSISTOR SI NPN CHIP	
Q8106	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8106	B1ABCF000104	TRANSISTOR SI NPN CHIP	
Q8107	2SD2216J08	TRANSISTOR SI NPN CHIP	
Q8107	B1ABCF000104	TRANSISTOR SI NPN CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D8001	MAZ80680ML	DIODE ZENER CHIP 6.8V	
D8004	MAZ81000HL	DIODE ZENER CHIP 10V	
D8101	MA3J741E0L	DIODE SI CHIP	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R8001	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8003	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8004	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8005	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8006	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8007	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8008	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8009	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8010	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8011	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8012	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8013	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8014	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8016	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R8017	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8019	ERJ3GEYJ222V	MGF CHIP 1/16W 2.2K	
R8021	ERJ3GEYJ222V	MGF CHIP 1/16W 2.2K	
R8022	ERJ3GEYJ562V	MGF CHIP 1/16W 5.6K	
R8023	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8024	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R8025	ERJ3GEYJ153V	MGF CHIP 1/16W 15K	
R8027	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8028	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8029	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8034	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R8035	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R8036	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R8037	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8038	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R8039	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R8044	ERJ3GEYJ303V	MGF CHIP 1/16W 30K	
R8045	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8046	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R8047	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R8049	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8056	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R8057	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R8058	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R8104	ERJ3GEYJ332V	MGF CHIP 1/16W 3.3K	
R8105	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R8106	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R8108	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R8109	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8110	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R8111	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C8001	ECJ2VB1C224K	C CHIP 16V 0.22UF	
C8002	ECJ1VB1A105K	C CHIP 10V 1UF	
C8003	ECJ1VB1A105K	C CHIP 10V 1UF	
C8004	ECJ1VB1A105K	C CHIP 10V 1UF	
C8005	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C8006	ECJ1VB1H103K	C CHIP 50V 0.01UF	
C8007	F1K1C105A023	C CHIP 16V 1UF	
C8008	ECJ1VB1C104K	C CHIP 16V 0.1UF	
C8009	ECJ1VB1A105K	C CHIP 10V 1UF	
C8010	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C8011	ECJ1VB1A105K	C CHIP 10V 1UF	
C8012	ECJ1VB1A105K	C CHIP 10V 1UF	
C8013	ECJ1VB1H152K	C CHIP 50V 0.0015UF	
C8014	ECJ2YB0J225K	C CHIP 6.3V 2.2UF	
C8015	ECJ2YF1C225Z	C CHIP 16V 2.2UF	
C8016	F1K1C2250005	C CHIP 16V 2.2UF	
C8017	F1K1C2250005	C CHIP 16V 2.2UF	
C8019	ECJ1VB1C104K	C CHIP 16V 0.1UF	
C8021	ECJ1VC1H471J	C CHIP 50V 470PF	
C8022	ECJ1VC1H471J	C CHIP 50V 470PF	
C8023	ECJ1VC1H471J	C CHIP 50V 470PF	
C8107	ECUV1A106KBP	C CHIP 10V 10UF	
C8108	ECHU1H273JB5	POLYESTER CHIP 50V 0.027UF	
C8109	LSCUCAD150J	C CHIP 2KV 15PF	
C8110	LSCUCAD220J	C CHIP 2KV 22PF	
C8113	ECJ1VB1C104K	C CHIP 16V 0.1UF	
C8114	ECJ1VB1A105K	C CHIP 10V 1UF	
C8115	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C8116	ECJ1VF1C104Z	C CHIP 16V 0.1UF	
C8117	F1J1C1050011	C CHIP 16V 1UF	
C8118	ECJ1VF1C104Z	C CHIP 16V 0.1UF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L8001	G1C100M00010	COIL CHIP 10UH	
L8002	G1C100M00010	COIL CHIP 10UH	
L8003	G1C100M00010	COIL CHIP 10UH	
L8004	G1C100M00010	COIL CHIP 10UH	
L8005	G1C100M00010	COIL CHIP 10UH	
L8103	G1C680M00011	INDUCTOR CHIP 68UH	
L8104	G1A100ZA0002	CHOKE COIL 10UH	

FPC CONNECTORS

Ref. No.	Part No.	Part Name & Description	Remarks
FP8001	K1MN25B00035	CONNECTOR 35P	
FP8002	K1MN24B00001	CONNECTOR 24P	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
PR8101	K5H1022A0008	FUSE CHIP 32V 1A	

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T8101	ETJV10ZA17AF	TRANSFORMER	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
702	LSMZ0341	INSULATION SHEET,PLASTIC	

17. SCHEMATIC DIAGRAMS FOR PRINTING WITH LETTER SIZE

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

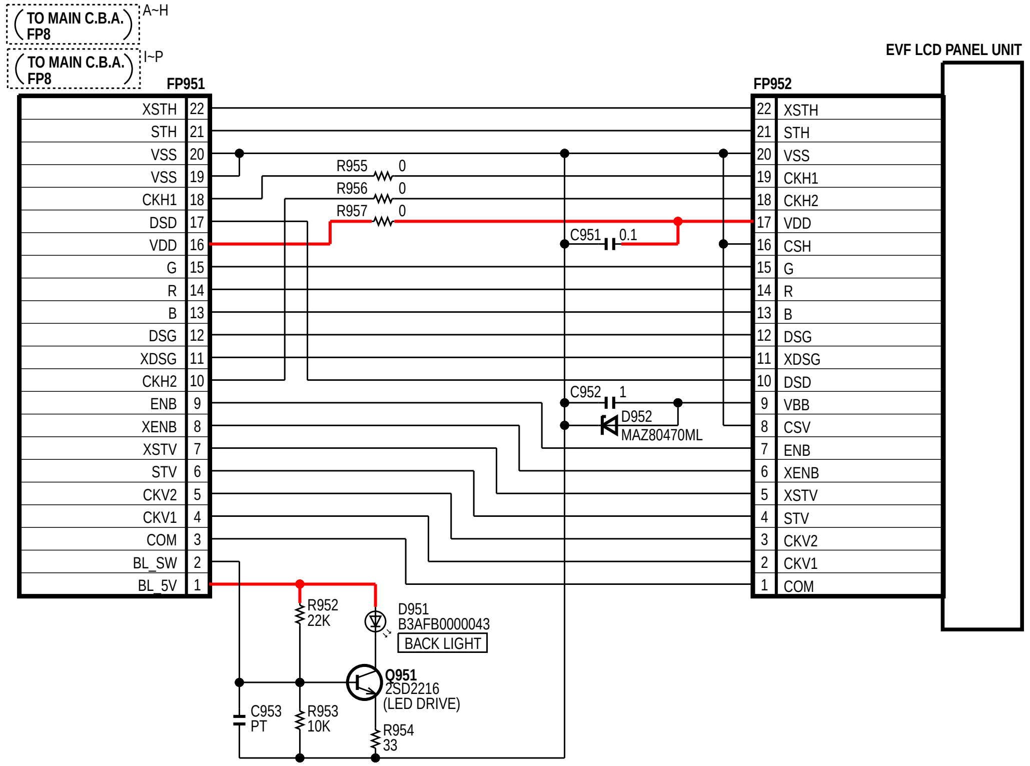
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

EVF BACKLIGHT SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
EVF BACKLIGHT IS NOT SERVICEABLE AND IS SUPPLIED
AS A EVF MAIN CASE UNIT ONLY FOR REPLACEMENT.

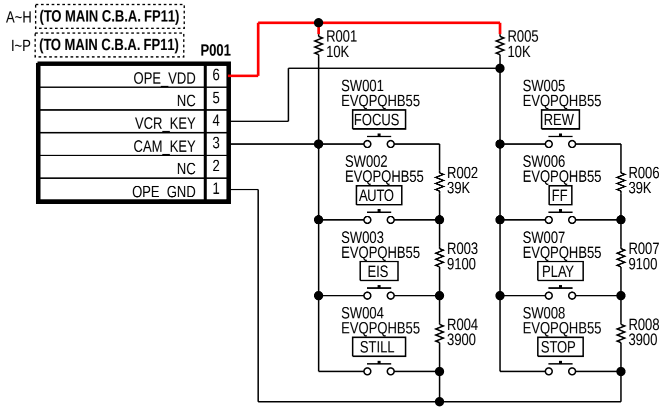


TO MAIN C.B.A. FP8 A~H
TO MAIN C.B.A. FP8 I~P
FP951
XSTH 22
STH 21
VSS 20
VSS 19
CKH1 18
DSD 17
VDD 16
G 15
R 14
B 13
DSG 12
XDSG 11
CKH2 10
ENB 9
XENB 8
XSTV 7
STV 6
CKV2 5
CKV1 4
COM 3
BL_SW 2
BL_5V 1
R955 0
R956 0
R957 0
C951 0.1
C952 1
D952 MAZ80470ML
EVF LCD PANEL UNIT
FP952
22 XSTH
21 STH
20 VSS
19 CKH1
18 CKH2
17 VDD
16 CSH
15 G
14 R
13 B
12 DSG
11 XDSG
10 DSD
9 VBB
8 CSV
7 ENB
6 XENB
5 XSTV
4 STV
3 CKV2
2 CKV1
1 COM
R952 22K
D951 B3AFB0000043
BACK LIGHT
Q951 2SD2216 (LED DRIVE)
C953 PT
R953 10K
R954 33

VCR OPERATION SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
VCR OPERATION IS NOT SERVICEABLE AND IS SUPPLIED
AS A SIDE CASE R UNIT ONLY FOR REPLACEMENT.

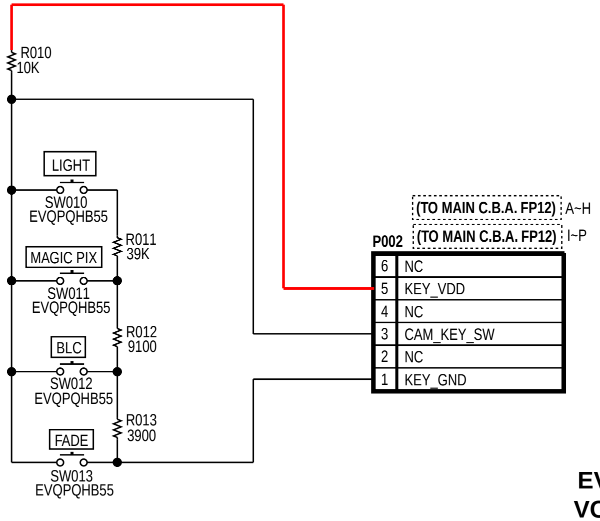


A~H (TO MAIN C.B.A. FP11)
I~P (TO MAIN C.B.A. FP11)
P001
OPE_VDD 6
NC 5
VCR_KEY 4
CAM_KEY 3
NC 2
OPE_GND 1
R001 10K
R005 10K
SW001 EVQPQHB55 FOCUS
SW002 EVQPQHB55 AUTO
SW003 EVQPQHB55 EIS
SW004 EVQPQHB55 STILL
SW005 EVQPQHB55 REW
SW006 EVQPQHB55 FF
SW007 EVQPQHB55 PLAY
SW008 EVQPQHB55 STOP
R002 39K
R003 9100
R004 3900
R006 39K
R007 9100
R008 3900

CAMERA OPERATION SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
CAMERA OPERATION IS NOT SERVICEABLE AND IS SUPPLIED
AS A SIDE CASE R UNIT ONLY FOR REPLACEMENT.



R010 10K
LIGHT
SW010 EVQPQHB55
R011 39K
MAGIC PIX
SW011 EVQPQHB55
R012 9100
BLC
SW012 EVQPQHB55
R013 3900
FADE
SW013 EVQPQHB55
(TO MAIN C.B.A. FP12) A~H
(TO MAIN C.B.A. FP12) I~P
P002
6 NC
5 KEY_VDD
4 NC
3 CAM_KEY_SW
2 NC
1 KEY_GND

EVF BACKLIGHT SCHEMATIC DIAGRAM
VCR OPERATION SCHEMATIC DIAGRAM
CAMERA OPERATION SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

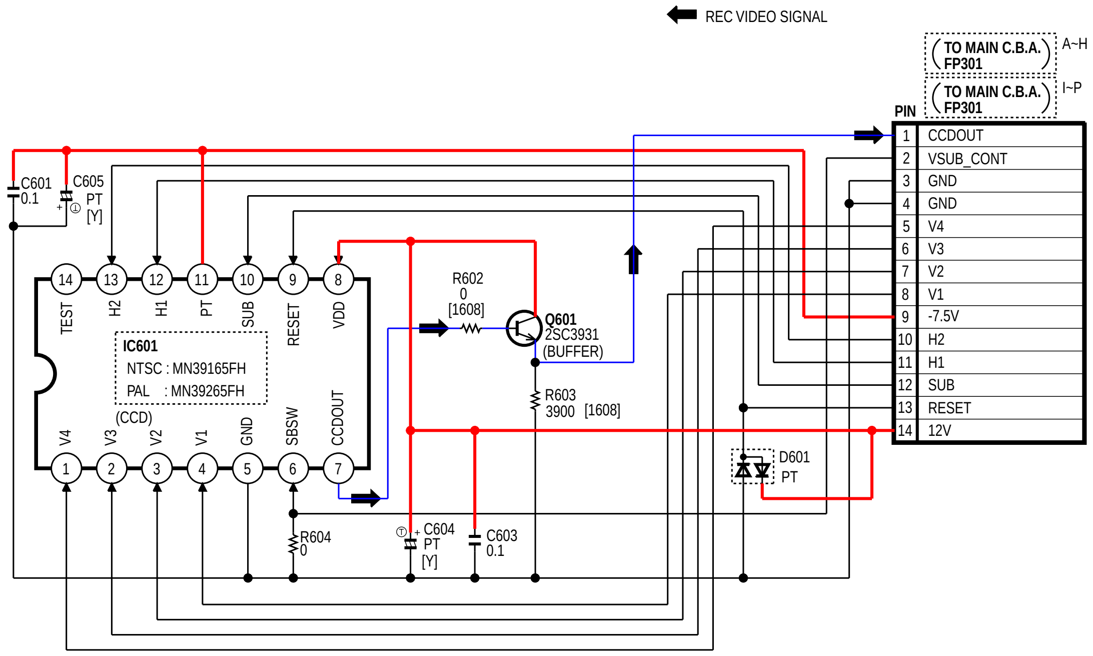
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

CCD SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
CCD C.B.A. IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.

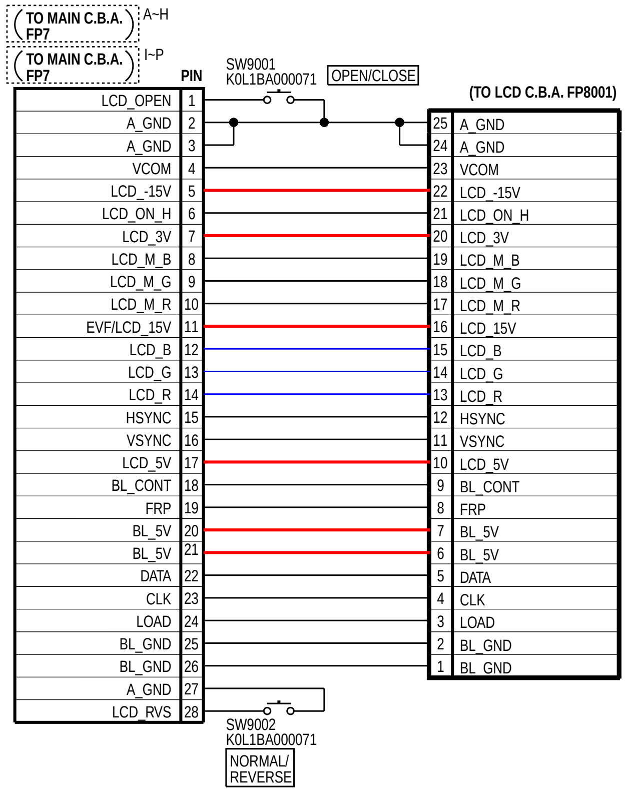


REC VIDEO SIGNAL
TO MAIN C.B.A. FP301
A~H
TO MAIN C.B.A. FP301
I~P
PIN
1 CCDOUT
2 VSUB_CONT
3 GND
4 GND
5 V4
6 V3
7 V2
8 V1
9 -7.5V
10 H2
11 H1
12 SUB
13 RESET
14 12V
C601
0.1
C605
PT
[Y]
14 TEST
13 H2
12 H1
11 PT
10 SUB
9 RESET
8 VDD
IC601
NTSC : MN39165FH
PAL : MN39265FH
(CCD)
1 V4
2 V3
3 V2
4 V1
5 GND
6 SBSW
7 CCDOUT
R602
0
[1608]
Q601
2SC3931
(BUFFER)
R603
3900 [1608]
R604
0
C604
PT
[Y]
C603
0.1
D601
PT

LCD SW SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
LCD SW IS NOT SERVICEABLE AND IS SUPPLIED
AS A SHAFT CASE UNIT ONLY FOR REPLACEMENT.

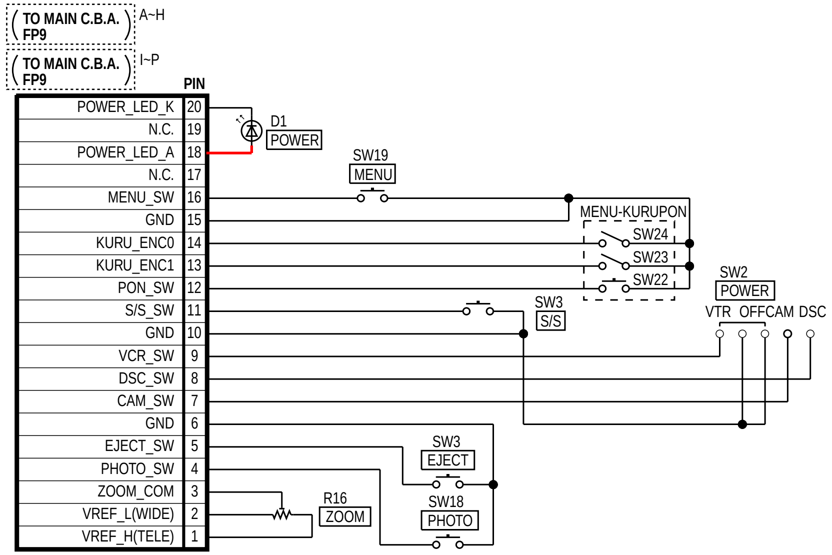


TO MAIN C.B.A. FP7
A~H
TO MAIN C.B.A. FP7
I~P
PIN
SW9001
K0L1BA000071
OPEN/CLOSE
(TO LCD C.B.A. FP8001)
LCD_OPEN 1
A_GND 2
A_GND 3
VCOM 4
LCD_-15V 5
LCD_ON_H 6
LCD_3V 7
LCD_M_B 8
LCD_M_G 9
LCD_M_R 10
EVF/LCD_15V 11
LCD_B 12
LCD_G 13
LCD_R 14
HSYNC 15
VSYNC 16
LCD_5V 17
BL_CONT 18
FRP 19
BL_5V 20
BL_5V 21
DATA 22
CLK 23
LOAD 24
BL_GND 25
BL_GND 26
A_GND 27
LCD_RVS 28
25 A_GND
24 A_GND
23 VCOM
22 LCD_-15V
21 LCD_ON_H
20 LCD_3V
19 LCD_M_B
18 LCD_M_G
17 LCD_M_R
16 LCD_15V
15 LCD_B
14 LCD_G
13 LCD_R
12 HSYNC
11 VSYNC
10 LCD_5V
9 BL_CONT
8 FRP
7 BL_5V
6 BL_5V
5 DATA
4 CLK
3 LOAD
2 BL_GND
1 BL_GND
SW9002
K0L1BA000071
NORMAL/ REVERSE

SIDE CASE L SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
SIDE CASE L IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



TO MAIN C.B.A. FP9
A~H
TO MAIN C.B.A. FP9
I~P
PIN
POWER_LED_K 20
N.C. 19
POWER_LED_A 18
N.C. 17
MENU_SW 16
GND 15
KURU_ENC0 14
KURU_ENC1 13
PON_SW 12
S/S_SW 11
GND 10
VCR_SW 9
DSC_SW 8
CAM_SW 7
GND 6
EJECT_SW 5
PHOTO_SW 4
ZOOM_COM 3
VREF_L(WIDE) 2
VREF_H(TELE) 1
D1
POWER
SW19
MENU
MENU-KURUPON
SW24
SW23
SW22
SW3
S/S
SW2
POWER
VTR OFF CAM DSC
SW3
EJECT
SW18
PHOTO
R16
ZOOM

CCD SCHEMATIC DIAGRAM
SIDE CASE L SCHEMATIC DIAGRAM
LCD SW SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

INTERCONNECTION SCHEMATIC DIAGRAM

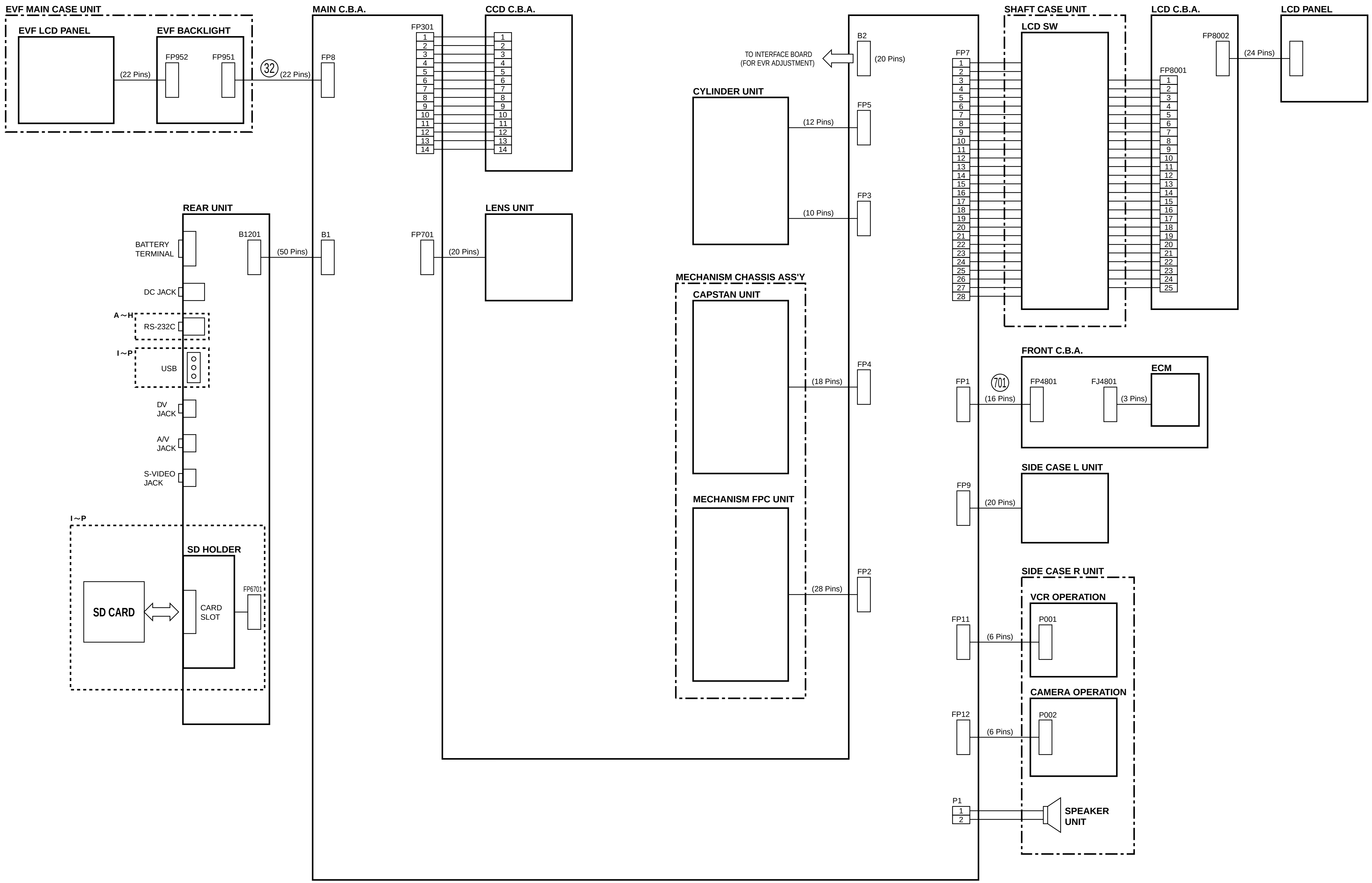
NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

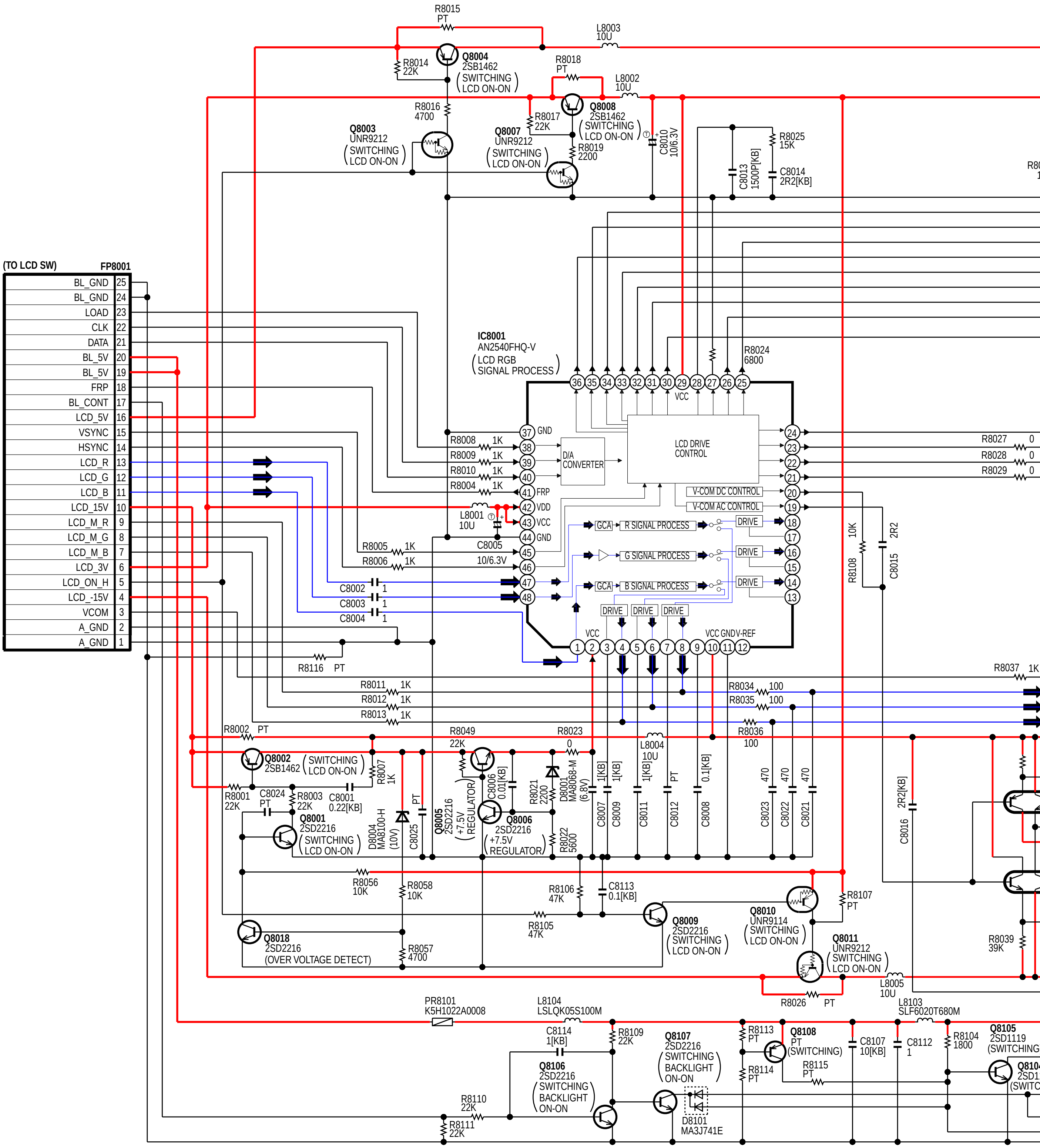

EVF MAIN CASE UNIT
EVF LCD PANEL
EVF BACKLIGHT
FP952
FP951
(22 Pins)
㉜
(22 Pins)
MAIN C.B.A.
FP8
FP301
CCD C.B.A.
1
2
3
4
5
6
7
8
9
10
11
12
13
14
REAR UNIT
BATTERY TERMINAL
B1201
B1
(50 Pins)
FP701
(20 Pins)
LENS UNIT
DC JACK
A～H
RS-232C
I～P
USB
DV JACK
A/V JACK
S-VIDEO JACK
I～P
SD HOLDER
SD CARD
CARD SLOT
FP6701
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
B2
(20 Pins)
CYLINDER UNIT
FP5
(12 Pins)
FP3
(10 Pins)
MECHANISM CHASSIS ASS'Y
CAPSTAN UNIT
FP4
(18 Pins)
MECHANISM FPC UNIT
FP2
(28 Pins)
SHAFT CASE UNIT
LCD SW
FP7
LCD C.B.A.
FP8002
FP8001
(24 Pins)
LCD PANEL
FRONT C.B.A.
ECM
FP1
(701)
FP4801
FJ4801
(16 Pins)
(3 Pins)
SIDE CASE L UNIT
FP9
(20 Pins)
SIDE CASE R UNIT
VCR OPERATION
FP11
P001
(6 Pins)
CAMERA OPERATION
FP12
P002
(6 Pins)
P1
SPEAKER UNIT

9.4. LCD SCHEMATIC DIAGRAM

LCD SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MAR

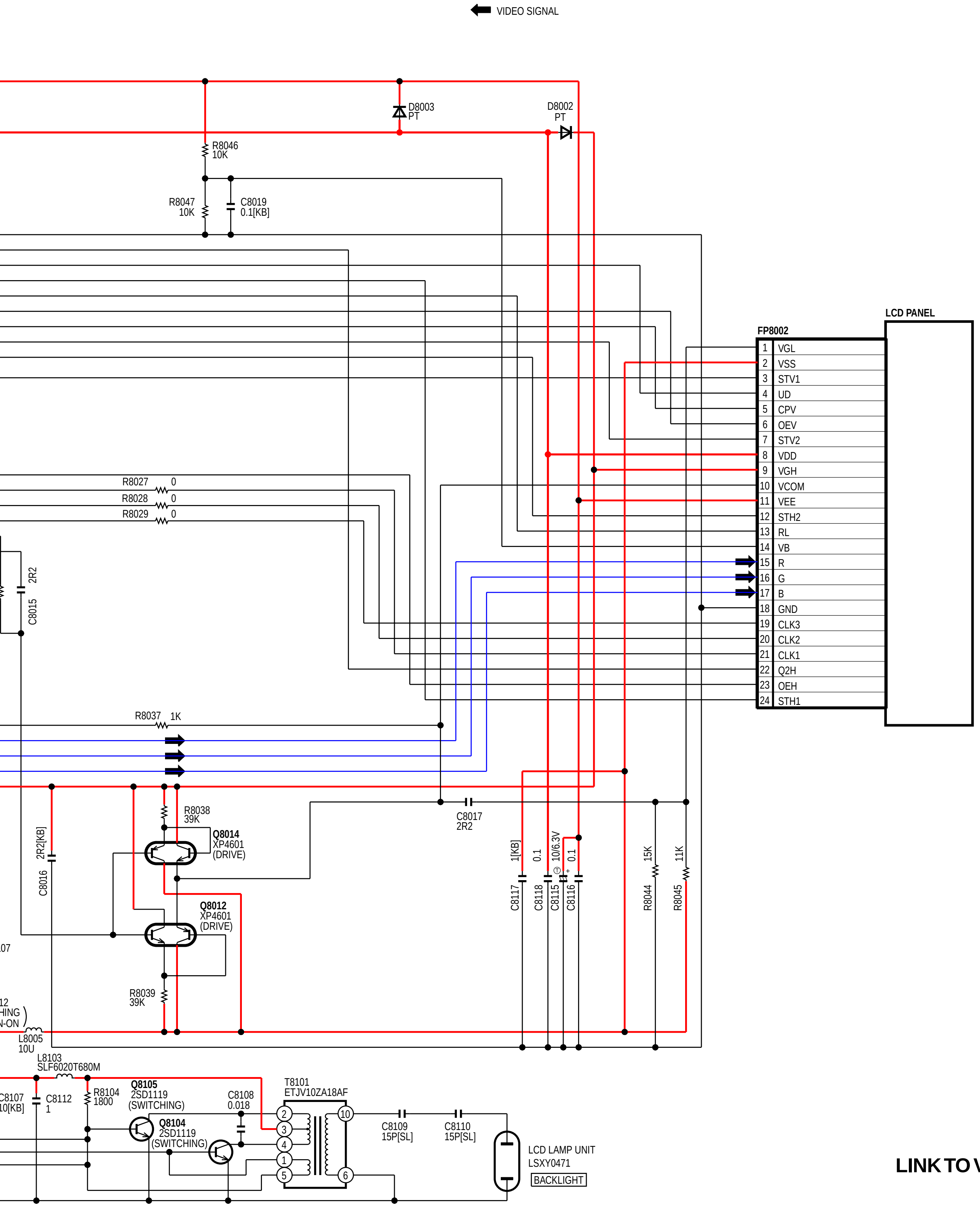


(TO LCD SW)
FP8001
BL_GND 25
BL_GND 24
LOAD 23
CLK 22
DATA 21
BL_5V 20
BL_5V 19
FRP 18
BL_CONT 17
LCD_5V 16
VSYNC 15
HSYNC 14
LCD_R 13
LCD_G 12
LCD_B 11
LCD_15V 10
LCD_M_R 9
LCD_M_G 8
LCD_M_B 7
LCD_3V 6
LCD_ON_H 5
LCD_-15V 4
VCOM 3
A_GND 2
A_GND 1
R8015 PT
L8003 10U
R8014 22K
Q8004 2SB1462 (SWITCHING LCD ON-ON)
R8018 PT
L8002 10U
R8016 4700
Q8003 UNR9212 (SWITCHING LCD ON-ON)
R8017 22K
Q8008 2SB1462 (SWITCHING LCD ON-ON)
Q8007 UNR9212 (SWITCHING LCD ON-ON)
R8019 2200
C8010 10/6.3V
C8013 1500P[KB]
R8025 15K
C8014 2R2[KB]
IC8001 AN2540FHQ-V (LCD RGB SIGNAL PROCESS)
R8024 6800
VCC
GND
FRP
VDD
D/A CONVERTER
LCD DRIVE CONTROL
V-COM DC CONTROL
V-COM AC CONTROL
GCA
R SIGNAL PROCESS
G SIGNAL PROCESS
B SIGNAL PROCESS
DRIVE
VCC GNDV-REF
R8008 1K
R8009 1K
R8010 1K
R8004 1K
L8001 10U
C8005 10/6.3V
R8005 1K
R8006 1K
C8002 1
C8003 1
C8004 1
R8027 0
R8028 0
R8029 0
R8108 10K
C8015 2R2
R8116 PT
R8011 1K
R8012 1K
R8013 1K
R8037 1K
R8034 100
R8035 100
R8036 100
R8002 PT
R8049 22K
R8023 0
Q8002 2SB1462 (SWITCHING LCD ON-ON)
R8007 1K
C8006 0.01[KB]
D8001 MA8068-M (6.8V)
R8021 2200
L8004 10U
C8007 1[KB]
C8009 1[KB]
C8011 1[KB]
C8012 PT
C8008 0.1[KB]
C8023 470
C8022 470
C8021 470
C8016 2R2[KB]
R8001 22K
C8024 PT
R8003 22K
C8001 0.22[KB]
Q8001 2SD2216 (SWITCHING LCD ON-ON)
D8004 MA8100-H (10V)
C8025 PT
Q8005 2SD2216 (+7.5V REGULATOR)
Q8006 2SD2216 (+7.5V REGULATOR)
R8022 5600
R8056 10K
R8058 10K
R8106 47K
C8113 0.1[KB]
R8105 47K
Q8009 2SD2216 (SWITCHING LCD ON-ON)
Q8010 UNR9114 (SWITCHING LCD ON-ON)
R8107 PT
Q8011 UNR9212 (SWITCHING LCD ON-ON)
R8039 39K
Q8018 2SD2216 (OVER VOLTAGE DETECT)
R8057 4700
L8005 10U
R8026 PT
PR8101 K5H1022A0008
L8104 LSLQK05S100M
L8103 SLF6020T680M
C8114 1[KB]
R8109 22K
Q8107 2SD2216 (SWITCHING BACKLIGHT ON-ON)
R8113 PT
Q8108 PT (SWITCHING)
C8107 10[KB]
C8112 1
R8104 1800
Q8105 2SD1119 (SWITCHING
Q8106 2SD2216 (SWITCHING BACKLIGHT ON-ON)
R8114 PT
R8115 PT
R8110 22K
R8111 22K
D8101 MA3J741E

arts list.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.


VIDEO SIGNAL
D8003
PT
D8002
PT
R8046
10K
R8047
10K
C8019
0.1[KB]
LCD PANEL
FP8002
1 VGL
2 VSS
3 STV1
4 UD
5 CPV
6 OEV
7 STV2
8 VDD
9 VGH
10 VCOM
11 VEE
12 STH2
13 RL
14 VB
15 R
16 G
17 B
18 GND
19 CLK3
20 CLK2
21 CLK1
22 Q2H
23 OEH
24 STH1
R8027 0
R8028 0
R8029 0
2R2
C8015
R8037 1K
C8016
2R2[KB]
R8038
39K
Q8014
XP4601
(DRIVE)
Q8012
XP4601
(DRIVE)
R8039
39K
07
12
HING
N-ON
L8005
10U
C8017
2R2
C8117
1[KB]
C8118
0.1
C8115
10/6.3V
C8116
0.1
R8044
15K
R8045
11K
L8103
SLF6020T680M
C8107
10[KB]
C8112
1
R8104
1800
Q8105
2SD1119
(SWITCHING)
Q8104
2SD1119
(SWITCHING)
C8108
0.018
T8101
ETJV10ZA18AF
C8109
15P[SL]
C8110
15P[SL]
LCD LAMP UNIT
LSXY0471
BACKLIGHT

LINK TO VOLTAGE CHART

LSJB8218
LCD SCHEMATIC DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

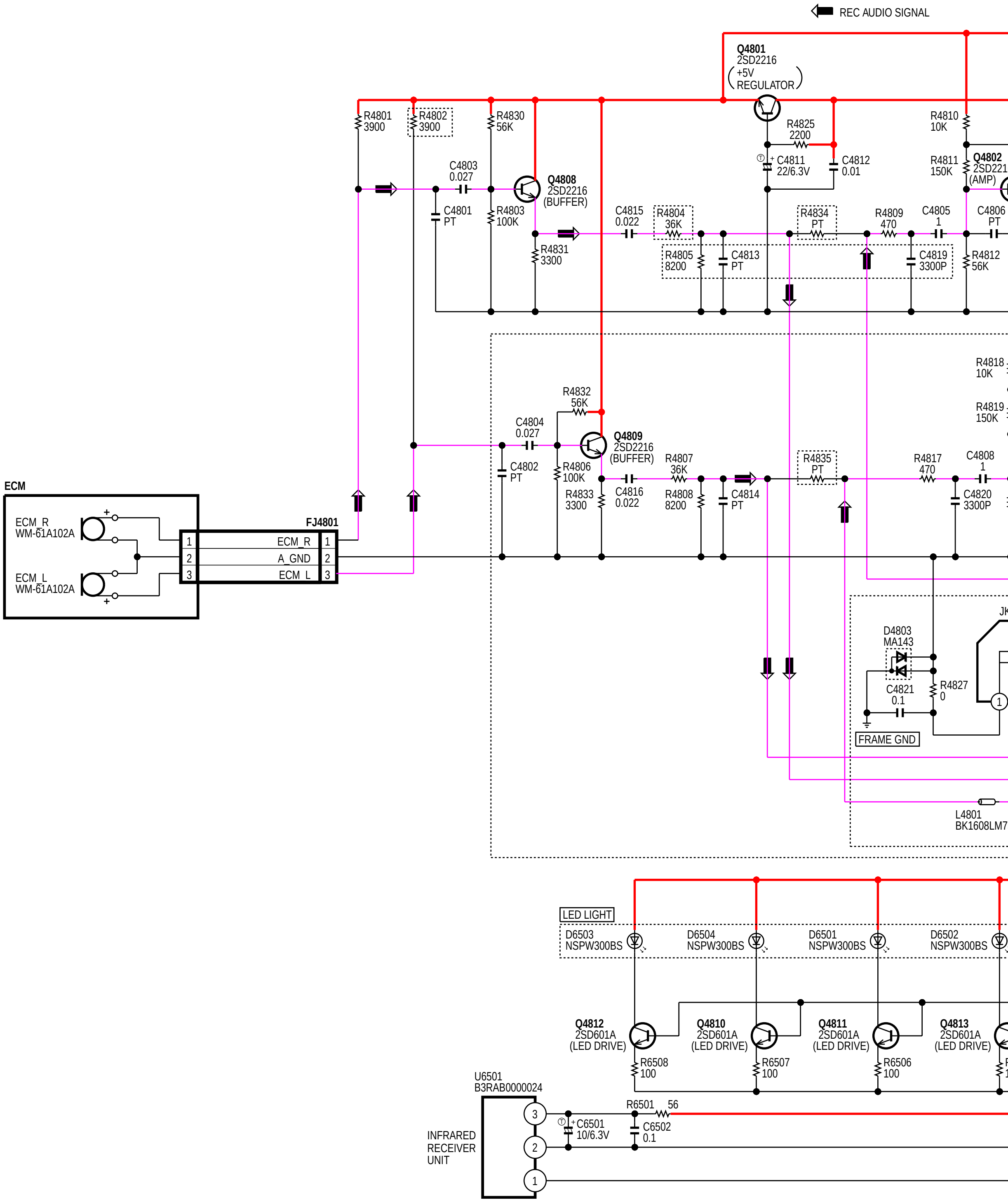
9.5. FRONT SCHEMATIC DIAGRAM

FRONT SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARI

“FOR REFERENCE O



REC AUDIO SIGNAL
Q4801
2SD2216
(+5V REGULATOR)
R4801 3900
R4802 3900
R4830 56K
R4825 2200
C4811 22/6.3V
C4812 0.01
R4810 10K
R4811 150K
Q4802 2SD221
(AMP)
C4803 0.027
Q4808 2SD2216 (BUFFER)
C4801 PT
R4803 100K
C4815 0.022
R4834 36K
R4834 PT
R4809 470
C4805 1
C4806 PT
R4831 3300
R4805 8200
C4813 PT
C4819 3300P
R4812 56K
R4818 10K
R4819 150K
R4832 56K
C4804 0.027
Q4809 2SD2216 (BUFFER)
C4802 PT
R4806 100K
R4807 36K
R4835 PT
R4817 470
C4808 1
R4833 3300
C4816 0.022
R4808 8200
C4814 PT
C4820 3300P
ECM
ECM_R
WM-61A102A
ECM_L
WM-61A102A
FJ4801
1 ECM_R 1
2 A_GND 2
3 ECM_L 3
JK
D4803 MA143
C4821 0.1
R4827 0
FRAME GND
L4801 BK1608LM7
LED LIGHT
D6503 NSPW300BS
D6504 NSPW300BS
D6501 NSPW300BS
D6502 NSPW300BS
Q4812 2SD601A (LED DRIVE)
Q4810 2SD601A (LED DRIVE)
Q4811 2SD601A (LED DRIVE)
Q4813 2SD601A (LED DRIVE)
R6508 100
R6507 100
R6506 100
U6501 B3RAB0000024
INFRARED RECEIVER UNIT
R6501 56
C6501 10/6.3V
C6502 0.1

parts list.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

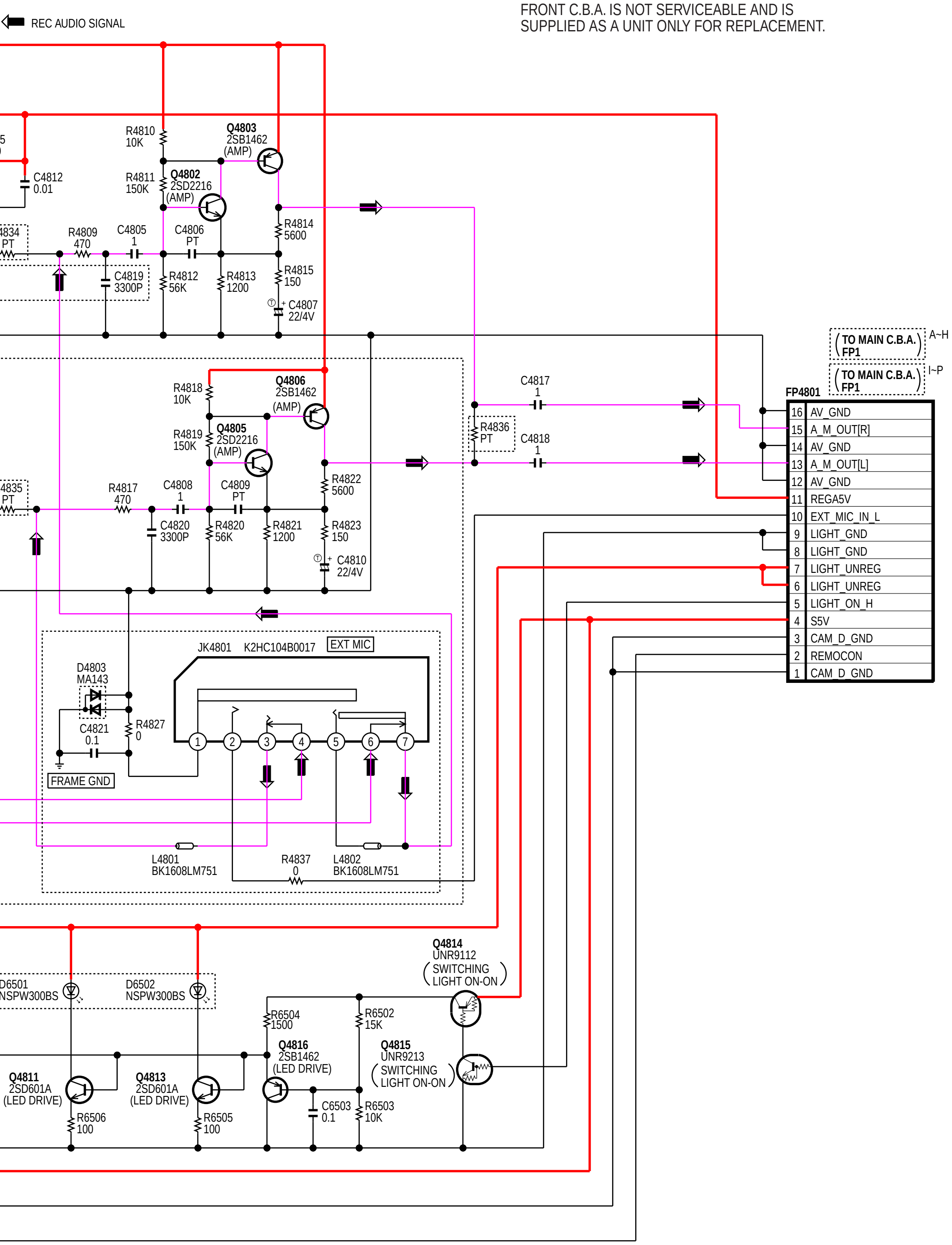
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

FOR REFERENCE ONLY”

NOTE:
FRONT C.B.A. IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.


REC AUDIO SIGNAL
R4810 10K
Q4803 2SB1462 (AMP)
C4812 0.01
R4811 150K
Q4802 2SD2216 (AMP)
R4814 5600
4834 PT
R4809 470
C4805 1
C4806 PT
C4819 3300P
R4812 56K
R4813 1200
R4815 150
C4807 22/4V
R4818 10K
Q4806 2SB1462 (AMP)
R4819 150K
Q4805 2SD2216 (AMP)
R4822 5600
4835 PT
R4817 470
C4808 1
C4809 PT
C4820 3300P
R4820 56K
R4821 1200
R4823 150
C4810 22/4V
C4817 1
R4836 PT
C4818 1
TO MAIN C.B.A. FP1 A~H
TO MAIN C.B.A. FP1 I~P
FP4801
16 AV_GND
15 A_M_OUT[R]
14 AV_GND
13 A_M_OUT[L]
12 AV_GND
11 REGA5V
10 EXT_MIC_IN_L
9 LIGHT_GND
8 LIGHT_GND
7 LIGHT_UNREG
6 LIGHT_UNREG
5 LIGHT_ON_H
4 S5V
3 CAM_D_GND
2 REMOCON
1 CAM_D_GND
JK4801 K2HC104B0017
EXT MIC
D4803 MA143
C4821 0.1
R4827 0
FRAME GND
1 2 3 4 5 6 7
L4801 BK1608LM751
R4837 0
L4802 BK1608LM751
Q4814 UNR9112 (SWITCHING LIGHT ON-ON)
D6501 NSPW300BS
D6502 NSPW300BS
R6504 1500
R6502 15K
Q4816 2SB1462 (LED DRIVE)
Q4815 UNR9213 (SWITCHING LIGHT ON-ON)
Q4811 2SD601A (LED DRIVE)
Q4813 2SD601A (LED DRIVE)
C6503 0.1
R6503 10K
R6506 100
R6505 100

FRONT SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

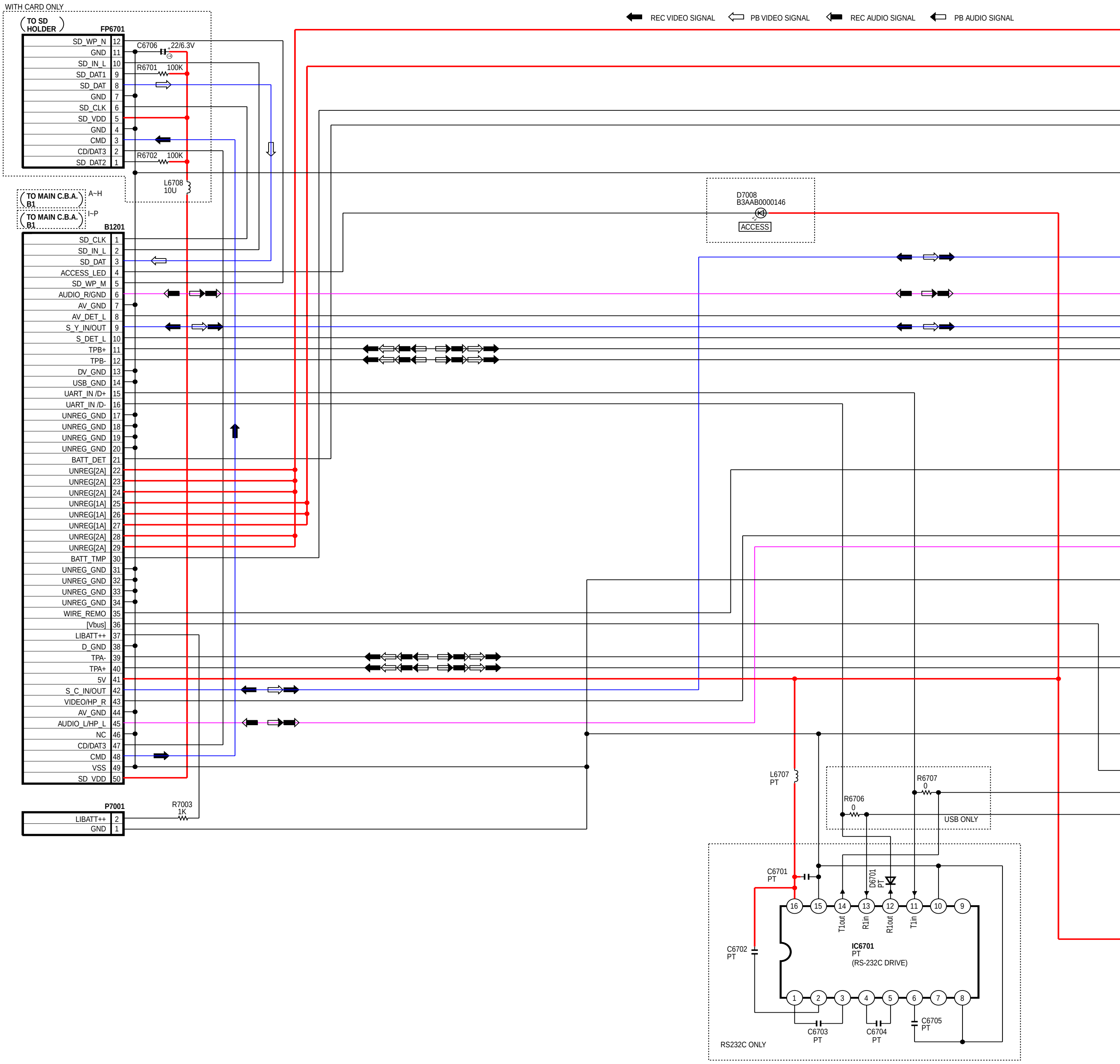
REAR SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARI

"FOR REFERENCE ONLY"

NOTE:
REAR C.B.A. IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEME


REC VIDEO SIGNAL
PB VIDEO SIGNAL
REC AUDIO SIGNAL
PB AUDIO SIGNAL
WITH CARD ONLY
TO SD HOLDER
FP6701
SD_WP_N 12
GND 11
SD_IN_L 10
SD_DAT1 9
SD_DAT 8
GND 7
SD_CLK 6
SD_VDD 5
GND 4
CMD 3
CD/DAT3 2
SD_DAT2 1
C6706 22/6.3V
R6701 100K
R6702 100K
L6708 10U
TO MAIN C.B.A. B1 A~H
TO MAIN C.B.A. B1 I~P
B1201
SD_CLK 1
SD_IN_L 2
SD_DAT 3
ACCESS_LED 4
SD_WP_M 5
AUDIO_R/GND 6
AV_GND 7
AV_DET_L 8
S_Y_IN/OUT 9
S_DET_L 10
TPB+ 11
TPB- 12
DV_GND 13
USB_GND 14
UART_IN /D+ 15
UART_IN /D- 16
UNREG_GND 17
UNREG_GND 18
UNREG_GND 19
UNREG_GND 20
BATT_DET 21
UNREG[2A] 22
UNREG[2A] 23
UNREG[2A] 24
UNREG[1A] 25
UNREG[1A] 26
UNREG[1A] 27
UNREG[2A] 28
UNREG[2A] 29
BATT_TMP 30
UNREG_GND 31
UNREG_GND 32
UNREG_GND 33
UNREG_GND 34
WIRE_REMO 35
[Vbus] 36
LIBATT++ 37
D_GND 38
TPA- 39
TPA+ 40
5V 41
S_C_IN/OUT 42
VIDEO/HP_R 43
AV_GND 44
AUDIO_L/HP_L 45
NC 46
CD/DAT3 47
CMD 48
VSS 49
SD_VDD 50
P7001
LIBATT++ 2
GND 1
R7003 1K
D7008 B3AAB0000146
ACCESS
L6707 PT
R6706 0
R6707 0
USB ONLY
C6701 PT
D6701 PT
C6702 PT
IC6701
PT
(RS-232C DRIVE)
T1out
R1in
R1out
T1in
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
C6703 PT
C6704 PT
C6705 PT
RS232C ONLY

arts list.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

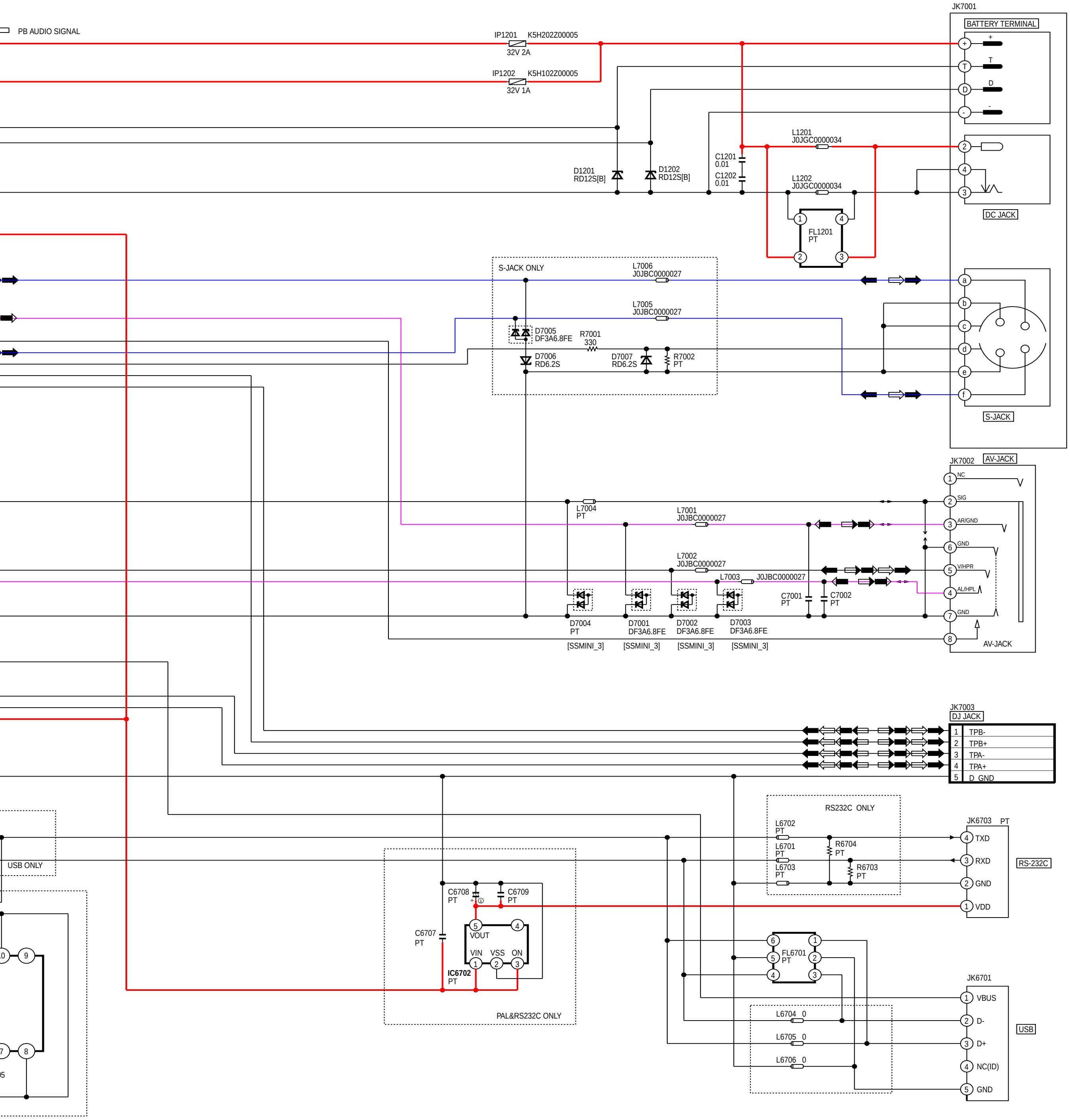
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

Y”

IS NOT SERVICEABLE AND IS
S A UNIT ONLY FOR REPLACEMENT.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT


PB AUDIO SIGNAL
IP1201 K5H202Z00005
32V 2A
IP1202 K5H102Z00005
32V 1A
JK7001
BATTERY TERMINAL
+
T
D
-
L1201
J0JGC0000034
L1202
J0JGC0000034
C1201
0.01
C1202
0.01
D1201
RD12S[B]
D1202
RD12S[B]
FL1201
PT
DC JACK
S-JACK ONLY
L7006
J0JBC0000027
L7005
J0JBC0000027
D7005
DF3A6.8FE
R7001
330
D7006
RD6.2S
D7007
RD6.2S
R7002
PT
a
b
c
d
e
f
S-JACK
JK7002
AV-JACK
NC
SIG
AR/GND
GND
V/HPR
AL/HPL
GND
L7004
PT
L7001
J0JBC0000027
L7002
J0JBC0000027
L7003
J0JBC0000027
C7001
PT
C7002
PT
D7004
PT
D7001
DF3A6.8FE
D7002
DF3A6.8FE
D7003
DF3A6.8FE
[SSMINI_3]
[SSMINI_3]
[SSMINI_3]
[SSMINI_3]
AV-JACK
JK7003
DJ JACK
1 TPB-
2 TPB+
3 TPA-
4 TPA+
5 D_GND
RS232C ONLY
L6702
PT
L6701
PT
L6703
PT
R6704
PT
R6703
PT
JK6703 PT
TXD
RXD
GND
VDD
RS-232C
USB ONLY
C6708
PT
C6709
PT
C6707
PT
VOUT
VIN VSS ON
IC6702
PT
PAL&RS232C ONLY
FL6701
PT
L6704 0
L6705 0
L6706 0
JK6701
VBUS
D-
D+
NC(ID)
GND
USB

REAR SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

9.7. EVF UNIT/VCR OPERATION/CAMERA OPERATION SCHEMATIC DIAGRAMS

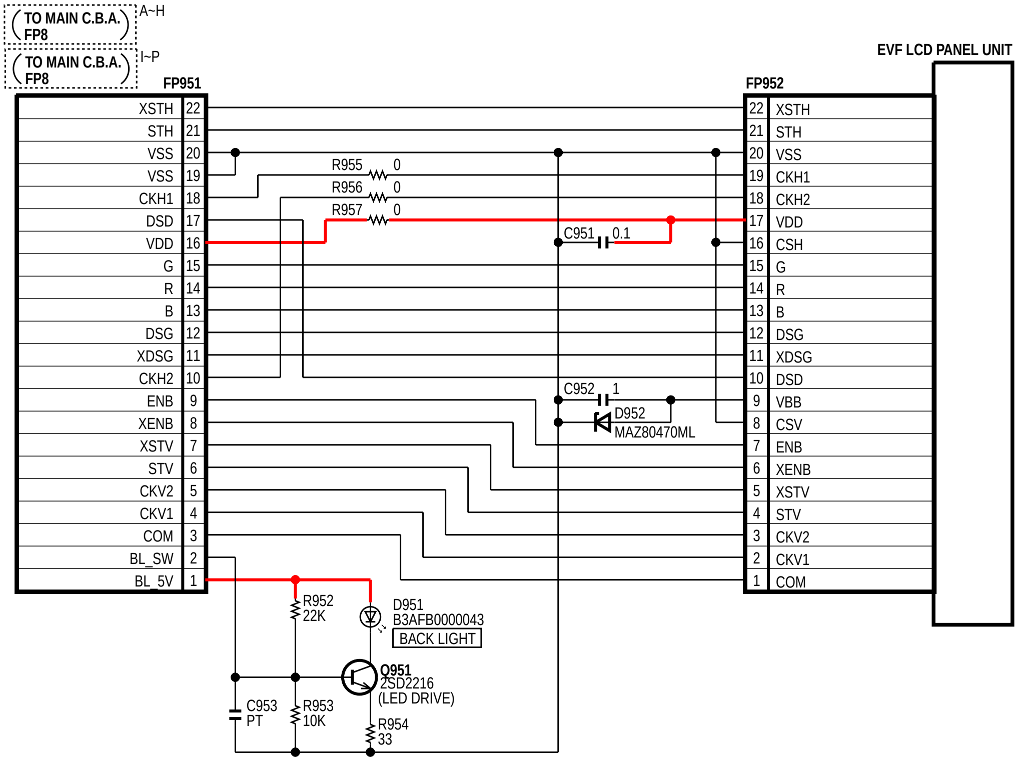
NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MAR

EVF BACKLIGHT SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
EVF BACKLIGHT IS NOT SERVICEABLE AND IS SUPPLIED
AS A EVF MAIN CASE UNIT ONLY FOR REPLACEMENT.



TO MAIN C.B.A. FP8
A~H
TO MAIN C.B.A. FP8
I~P
FP951
XSTH 22
STH 21
VSS 20
VSS 19
CKH1 18
DSD 17
VDD 16
G 15
R 14
B 13
DSG 12
XDSG 11
CKH2 10
ENB 9
XENB 8
XSTV 7
STV 6
CKV2 5
CKV1 4
COM 3
BL_SW 2
BL_5V 1
R955 0
R956 0
R957 0
C951 0.1
C952 1
D952
MAZ80470ML
EVF LCD PANEL UNIT
FP952
22 XSTH
21 STH
20 VSS
19 CKH1
18 CKH2
17 VDD
16 CSH
15 G
14 R
13 B
12 DSG
11 XDSG
10 DSD
9 VBB
8 CSV
7 ENB
6 XENB
5 XSTV
4 STV
3 CKV2
2 CKV1
1 COM
R952
22K
D951
B3AFB0000043
BACK LIGHT
Q951
2SD2216
(LED DRIVE)
C953
PT
R953
10K
R954
33

DIAGRAMS

parts list.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

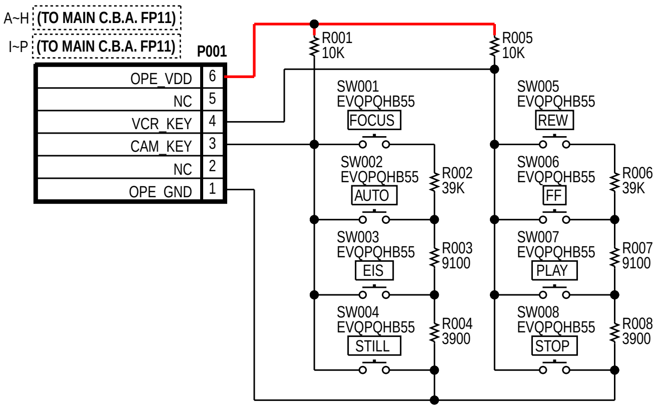
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

VCR OPERATION SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
VCR OPERATION IS NOT SERVICEABLE AND IS SUPPLIED AS A SIDE CASE R UNIT ONLY FOR REPLACEMENT.

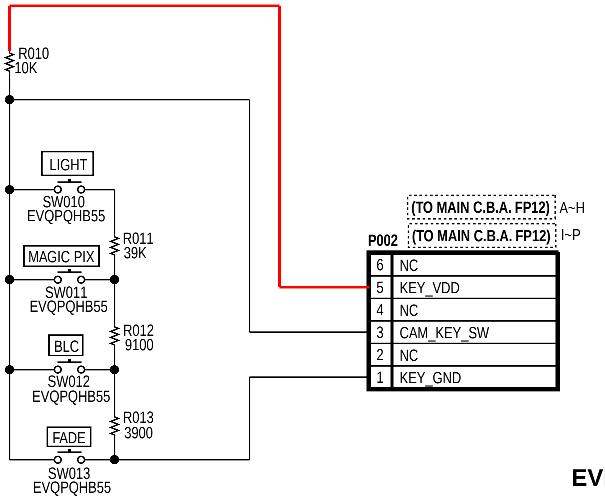


A~H (TO MAIN C.B.A. FP11)
I~P (TO MAIN C.B.A. FP11)
P001
OPE_VDD 6
NC 5
VCR_KEY 4
CAM_KEY 3
NC 2
OPE_GND 1
R001 10K
R005 10K
SW001 EVQPQHB55 FOCUS
SW002 EVQPQHB55 AUTO
SW003 EVQPQHB55 EIS
SW004 EVQPQHB55 STILL
SW005 EVQPQHB55 REW
SW006 EVQPQHB55 FF
SW007 EVQPQHB55 PLAY
SW008 EVQPQHB55 STOP
R002 39K
R003 9100
R004 3900
R006 39K
R007 9100
R008 3900

CAMERA OPERATION SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
CAMERA OPERATION IS NOT SERVICEABLE AND IS SUPPLIED AS A SIDE CASE R UNIT ONLY FOR REPLACEMENT.



R010 10K
LIGHT
SW010 EVQPQHB55
MAGIC PIX
SW011 EVQPQHB55
BLC
SW012 EVQPQHB55
FADE
SW013 EVQPQHB55
R011 39K
R012 9100
R013 3900
(TO MAIN C.B.A. FP12) A~H
(TO MAIN C.B.A. FP12) I~P
P002
6 NC
5 KEY_VDD
4 NC
3 CAM_KEY_SW
2 NC
1 KEY_GND

EVF BACKLIGHT SCHEMATIC DIAGRAM
VCR OPERATION SCHEMATIC DIAGRAM
CAMERA OPERATION SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

9.8. CCD/SIDE CASE L/LCD SW SCHEMATIC DIAGRAMS

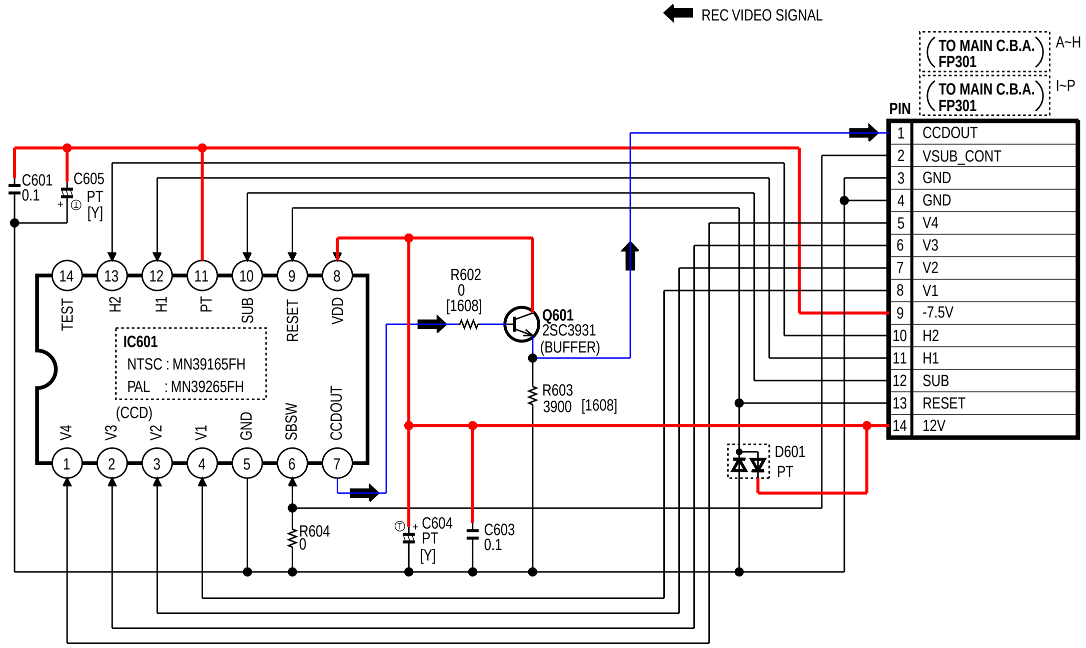
NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MAR

CCD SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
CCD C.B.A. IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.

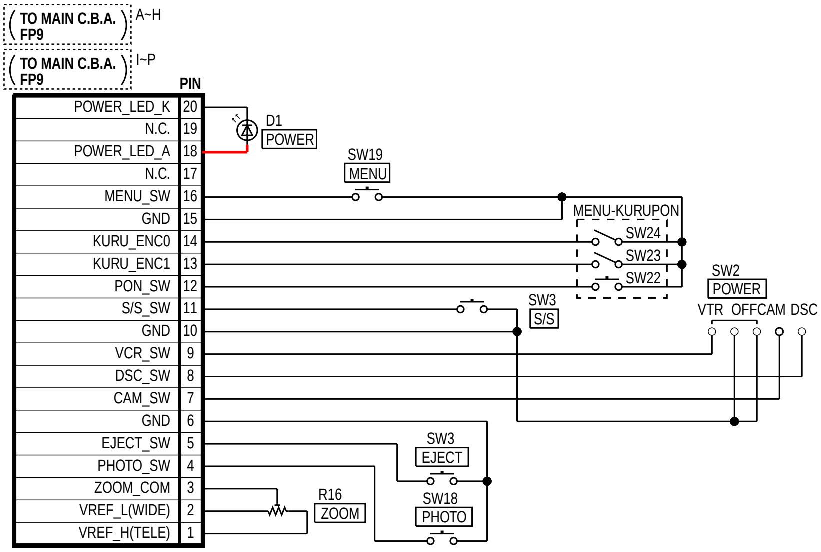


REC VIDEO SIGNAL
TO MAIN C.B.A. FP301 A~H
TO MAIN C.B.A. FP301 I~P
PIN
1 CCDOUT
2 VSUB_CONT
3 GND
4 GND
5 V4
6 V3
7 V2
8 V1
9 -7.5V
10 H2
11 H1
12 SUB
13 RESET
14 12V
C601 0.1
C605 PT [Y]
IC601
NTSC : MN39165FH
PAL : MN39265FH
(CCD)
14 TEST
13 H2
12 H1
11 PT
10 SUB
9 RESET
8 VDD
1 V4
2 V3
3 V2
4 V1
5 GND
6 SBSW
7 CCDOUT
R602 0 [1608]
Q601 2SC3931 (BUFFER)
R603 3900 [1608]
D601 PT
R604 0
C604 PT [Y]
C603 0.1

SIDE CASE L SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
SIDE CASE L IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



TO MAIN C.B.A. FP9 A~H
TO MAIN C.B.A. FP9 I~P
PIN
POWER_LED_K 20
N.C. 19
POWER_LED_A 18
N.C. 17
MENU_SW 16
GND 15
KURU_ENC0 14
KURU_ENC1 13
PON_SW 12
S/S_SW 11
GND 10
VCR_SW 9
DSC_SW 8
CAM_SW 7
GND 6
EJECT_SW 5
PHOTO_SW 4
ZOOM_COM 3
VREF_L(WIDE) 2
VREF_H(TELE) 1
D1 POWER
SW19 MENU
MENU-KURUPON
SW24
SW23
SW22
SW2 POWER
VTR OFF CAM DSC
SW3 S/S
SW3 EJECT
SW18 PHOTO
R16 ZOOM

arts list.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

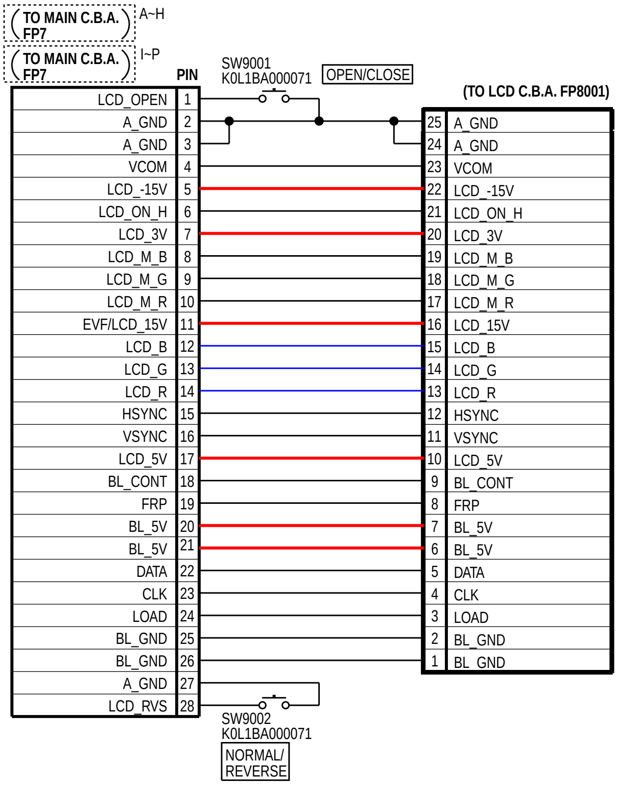
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

LCD SW SCHEMATIC DIAGRAM

“FOR REFERENCE ONLY”

NOTE:
LCD SW IS NOT SERVICEABLE AND IS SUPPLIED
AS A SHAFT CASE UNIT ONLY FOR REPLACEMENT.



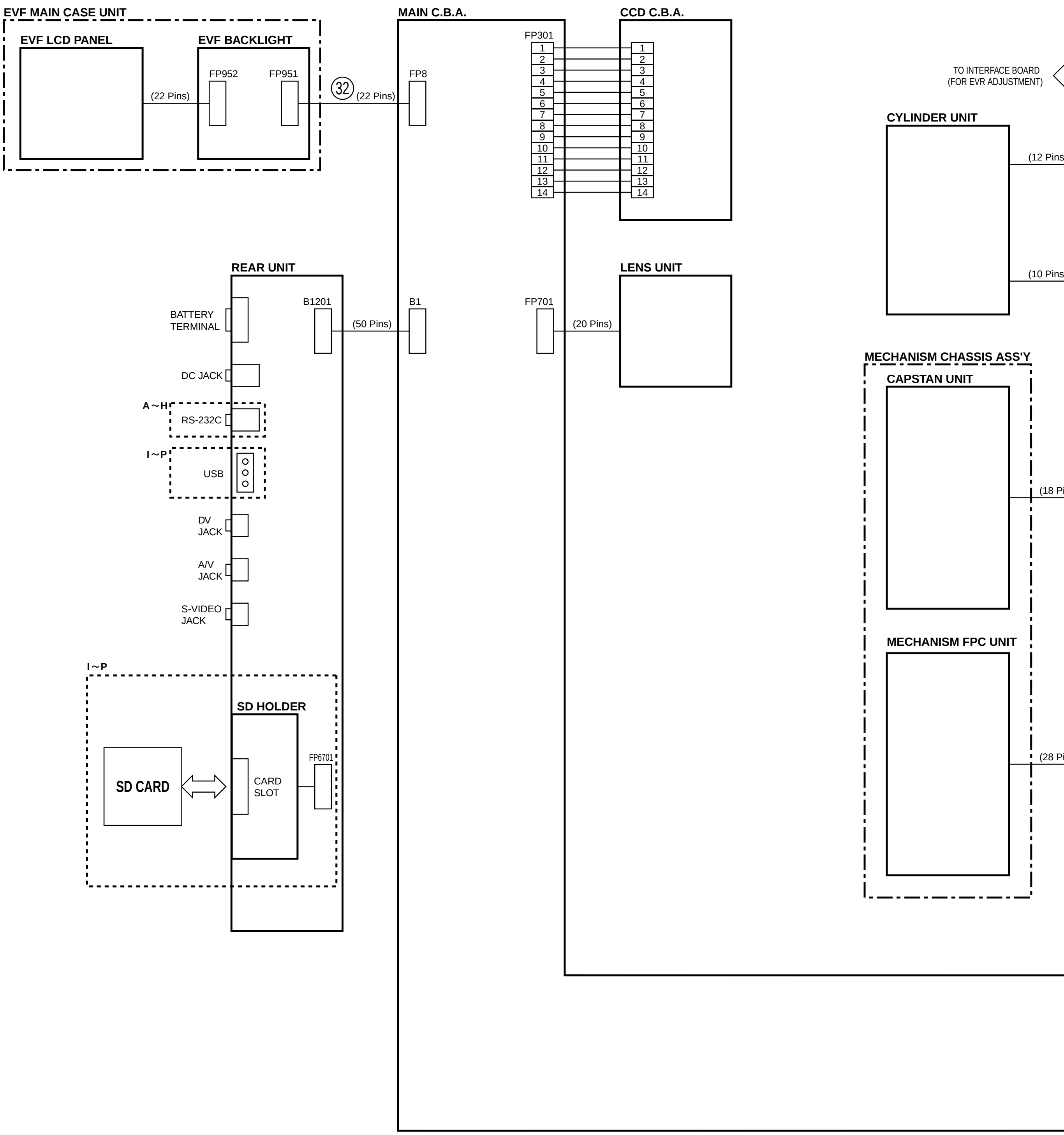
(TO MAIN C.B.A. FP7) A~H
(TO MAIN C.B.A. FP7) I~P
PIN
SW9001
K0L1BA000071
OPEN/CLOSE
(TO LCD C.B.A. FP8001)
1 LCD_OPEN
2 A_GND
3 A_GND
4 VCOM
5 LCD_-15V
6 LCD_ON_H
7 LCD_3V
8 LCD_M_B
9 LCD_M_G
10 LCD_M_R
11 EVF/LCD_15V
12 LCD_B
13 LCD_G
14 LCD_R
15 HSYNC
16 VSYNC
17 LCD_5V
18 BL_CONT
19 FRP
20 BL_5V
21 BL_5V
22 DATA
23 CLK
24 LOAD
25 BL_GND
26 BL_GND
27 A_GND
28 LCD_RVS
25 A_GND
24 A_GND
23 VCOM
22 LCD_-15V
21 LCD_ON_H
20 LCD_3V
19 LCD_M_B
18 LCD_M_G
17 LCD_M_R
16 LCD_15V
15 LCD_B
14 LCD_G
13 LCD_R
12 HSYNC
11 VSYNC
10 LCD_5V
9 BL_CONT
8 FRP
7 BL_5V
6 BL_5V
5 DATA
4 CLK
3 LOAD
2 BL_GND
1 BL_GND
SW9002
K0L1BA000071
NORMAL/ REVERSE

9.9. INTERCONNECTION SCHEMATIC DIAGRAM

INTERCONNECTION SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARI



EVF MAIN CASE UNIT
EVF LCD PANEL
EVF BACKLIGHT
FP952
FP951
(22 Pins)
32
(22 Pins)
FP8
MAIN C.B.A.
FP301
1
2
3
4
5
6
7
8
9
10
11
12
13
14
CCD C.B.A.
TO INTERFACE BOARD
(FOR EVR ADJUSTMENT)
CYLINDER UNIT
(12 Pins
(10 Pins
REAR UNIT
BATTERY TERMINAL
B1201
(50 Pins)
B1
FP701
(20 Pins)
LENS UNIT
DC JACK
A～H
RS-232C
I～P
USB
DV JACK
A/V JACK
S-VIDEO JACK
I～P
SD HOLDER
SD CARD
CARD SLOT
FP6701
MECHANISM CHASSIS ASS'Y
CAPSTAN UNIT
(18 Pi
MECHANISM FPC UNIT
(28 Pi

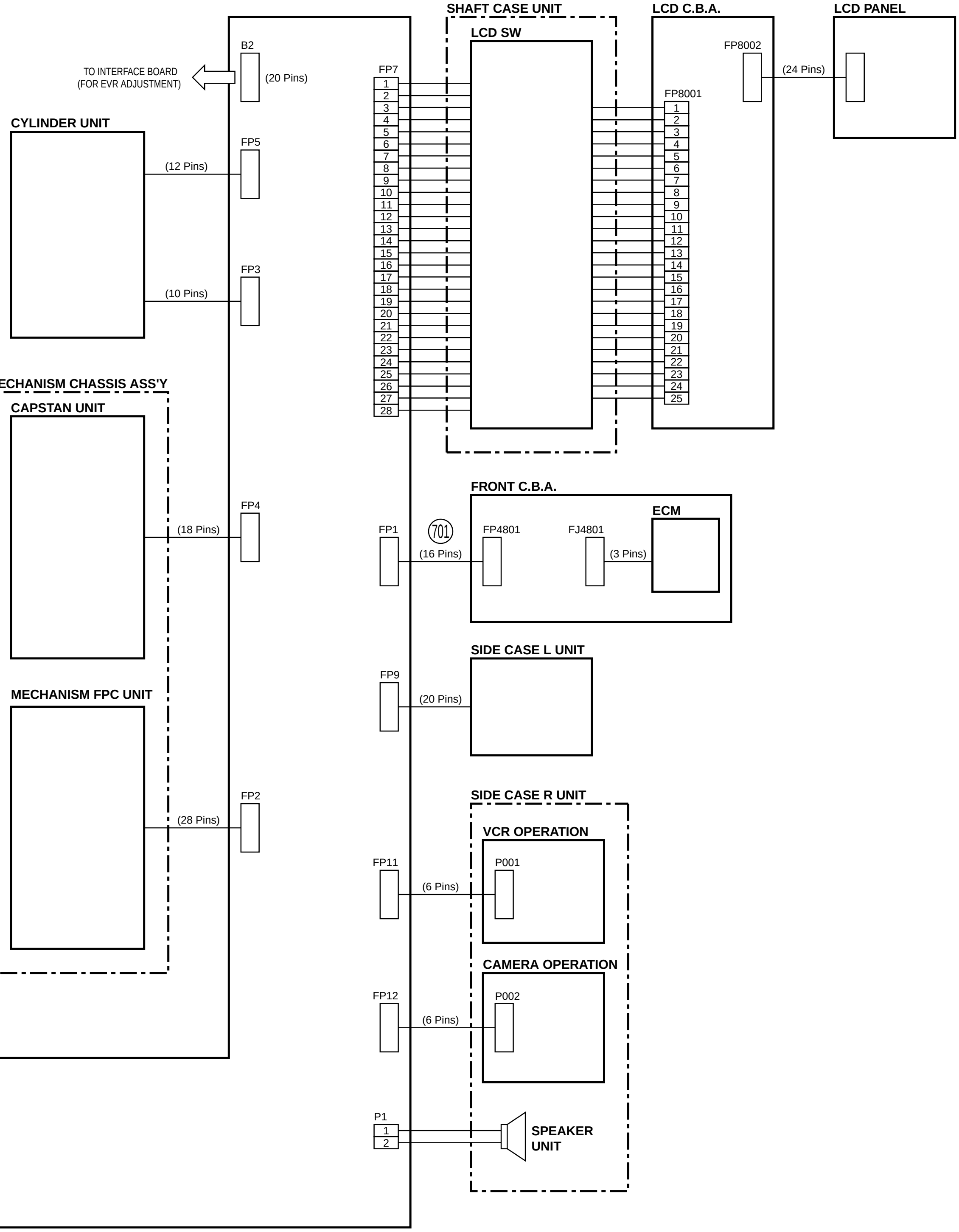
arts list.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

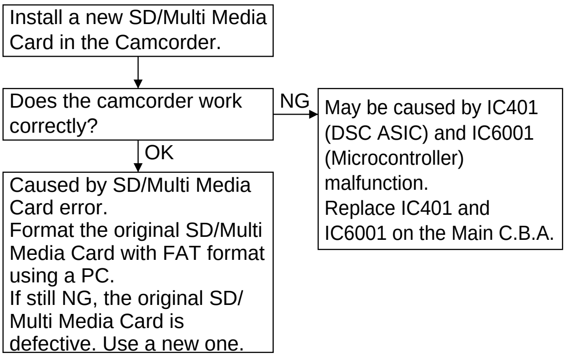
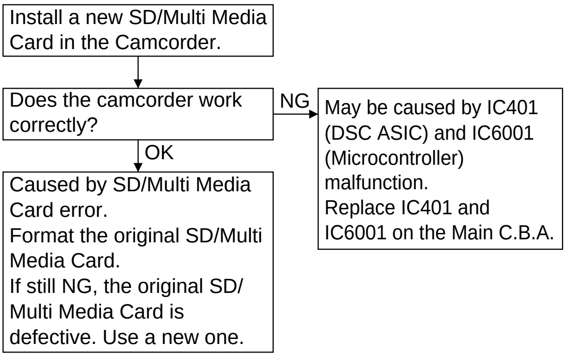

SHAFT CASE UNIT
LCD SW
LCD C.B.A.
LCD PANEL
B2
(20 Pins)
TO INTERFACE BOARD
(FOR EVR ADJUSTMENT)
FP7
FP8002
(24 Pins)
FP8001
CYLINDER UNIT
FP5
(12 Pins)
FP3
(10 Pins)
ECHANISM CHASSIS ASS'Y
CAPSTAN UNIT
FP4
(18 Pins)
FRONT C.B.A.
ECM
FP1
701
FP4801
FJ4801
(16 Pins)
(3 Pins)
SIDE CASE L UNIT
FP9
(20 Pins)
MECHANISM FPC UNIT
FP2
(28 Pins)
SIDE CASE R UNIT
VCR OPERATION
FP11
P001
(6 Pins)
CAMERA OPERATION
FP12
P002
(6 Pins)
P1
SPEAKER
UNIT

INTERCONNECTION SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

TROUBLESHOOTING HINTS FOR SD/MultiMediaCard Error
(Models: NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)

The following ERROR No. will be displayed on the Camcorder LCD Monitor or EVF Monitor when an Error occurred.

ERROR No.	Error Description	Possible solution
U11	The initial processing of IC401 and IC6001 for SD/Multi Media Card was failed. (Case 1) (May be caused by the interruption, such as POWER OFF or the removal of the SD/Multi Media Card, during accessing to the system area of the memory address.)	The SD/Multi Media Card is defective. Use a new SD/Multi Media Card. When a defect still goes on, it may be caused by bad contact between SD/Multi Media Card and IC401 (DSC ASIC) and IC6001 (Microcontroller.) Check following items and repair or replace if necessary. ・ Replace Rear Unit (Ref No. 13) ・ Replace IC401 (DSC ASIC) ・ Replace IC6001 (Microcontroller) ・ Repair contact (solder) of signal lines between IC401 and B1 connector (Pin 1,2,3,5,47,48) on the Main C.B.A.
U12	The initial processing of IC401 and IC403 for SD/Multi Media Card was failed. (Case 2) (May be caused by the interruption, such as POWER OFF or the removal of the SD/Multi Media Card, during accessing to the system area of the memory address.)	The SD/Multi Media Card is defective. Use a new SD/Multi Media Card.
U14	1. Communication Error (SD/Multi Media Card <--> Camcorder) 2. Card is formatted with the format which is not correponding. (ex. FAT32, NTFS)	 Install a new SD/Multi Media Card in the Camcorder. Does the camcorder work correctly? NG May be caused by IC401 (DSC ASIC) and IC6001 (Microcontroller) malfunction. Replace IC401 and IC6001 on the Main C.B.A. OK Caused by SD/Multi Media Card error. Format the original SD/Multi Media Card with FAT format using a PC. If still NG, the original SD/ Multi Media Card is defective. Use a new one.
U15	Communication Error (SD/Multi Media Card <--> Camcorder)	 Install a new SD/Multi Media Card in the Camcorder. Does the camcorder work correctly? NG May be caused by IC401 (DSC ASIC) and IC6001 (Microcontroller) malfunction. Replace IC401 and IC6001 on the Main C.B.A. OK Caused by SD/Multi Media Card error. Format the original SD/Multi Media Card. If still NG, the original SD/ Multi Media Card is defective. Use a new one.
U16	The power is shut off while the SD/Multi Media Card is accessing. Then, the accessing is stopped.	The SD/Multi Media Card may be defective. Use a new SD/Multi Media Card.
U30	Error other than above	May be caused by IC401 (DSC ASIC) and IC6001 (Microcontroller) malfunction. Replace IC401 and IC6001 on the Main C.B.A.

Note: When the SD Holder Unit connector is disconnected from FP6701 connector on the Rear Unit, "NO CARD" appears on-screen. Connect the SD Holder Unit connector firmly.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

LCD C.B.A.

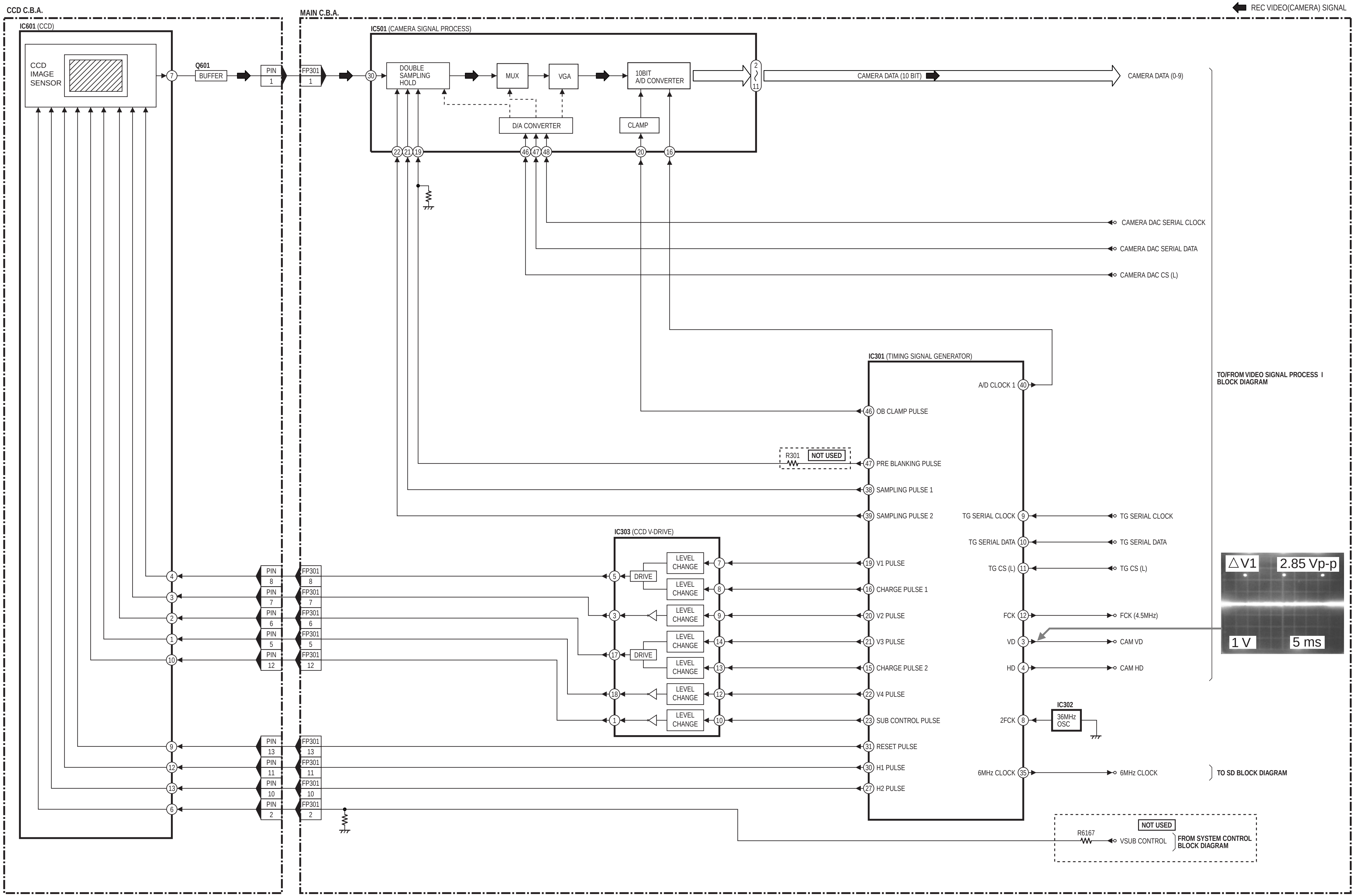
MODE PIN NO.	CAMERA
IC8001	
1	7.5
2	7.3
3	2.4
4	2.4
5	2.4
6	2.5
7	2.4
8	2.4
9	2.4
10	11.9
11	0
12	---
13	---
14	---
15	---
16	---
17	---
18	---
19	6.0
20	0
21	1.4
22	1.4
23	1.2
24	0.3
25	0
26	0
27	1.0
28	1.0
29	3.0
30	0
31	0
32	0
33	0
34	0
35	0
36	3.0
37	0
38	0
39	2.8
40	1.0
41	0
42	3.0
43	3.0
44	0
45	2.8
46	0
47	2.5
48	2.5
Q8001	
E	0
C	0
B	2.8

MODE PIN NO.	CAMERA
Q8002	
E	12.0
C	11.9
B	11.3
Q8003	
E	0
C	0
B	2.8
Q8004	
E	4.9
C	4.8
B	4.2
Q8005	
E	7.3
C	11.9
B	7.9
Q8006	
E	0
C	7.9
B	0.5
Q8007	
E	0
C	0
B	2.8
Q8008	
E	0
C	0
B	2.8
Q8009	
E	0
C	0
B	0.6
Q8010	
E	3.0
C	3.0
B	0
Q8011	
E	-14.6
C	-14.6
B	3.0
Q8012	
E1	0
C1	11.9
B1	0.6
E2	0.6
C2	-14.6
B2	0
Q8014	
E1	1.2
C1	0
B1	0.6
E2	0
C2	11.9
B2	1.2

MODE PIN NO.	CAMERA
Q8018	
E	0
C	0
B	3.0
Q8104	
E	0
C	4.6
B	-0.4
Q8105	
E	0
C	4.6
B	-0.4
Q8106	
E	0
C	0
B	0.7
Q8107	
E	0
C	0
B	0

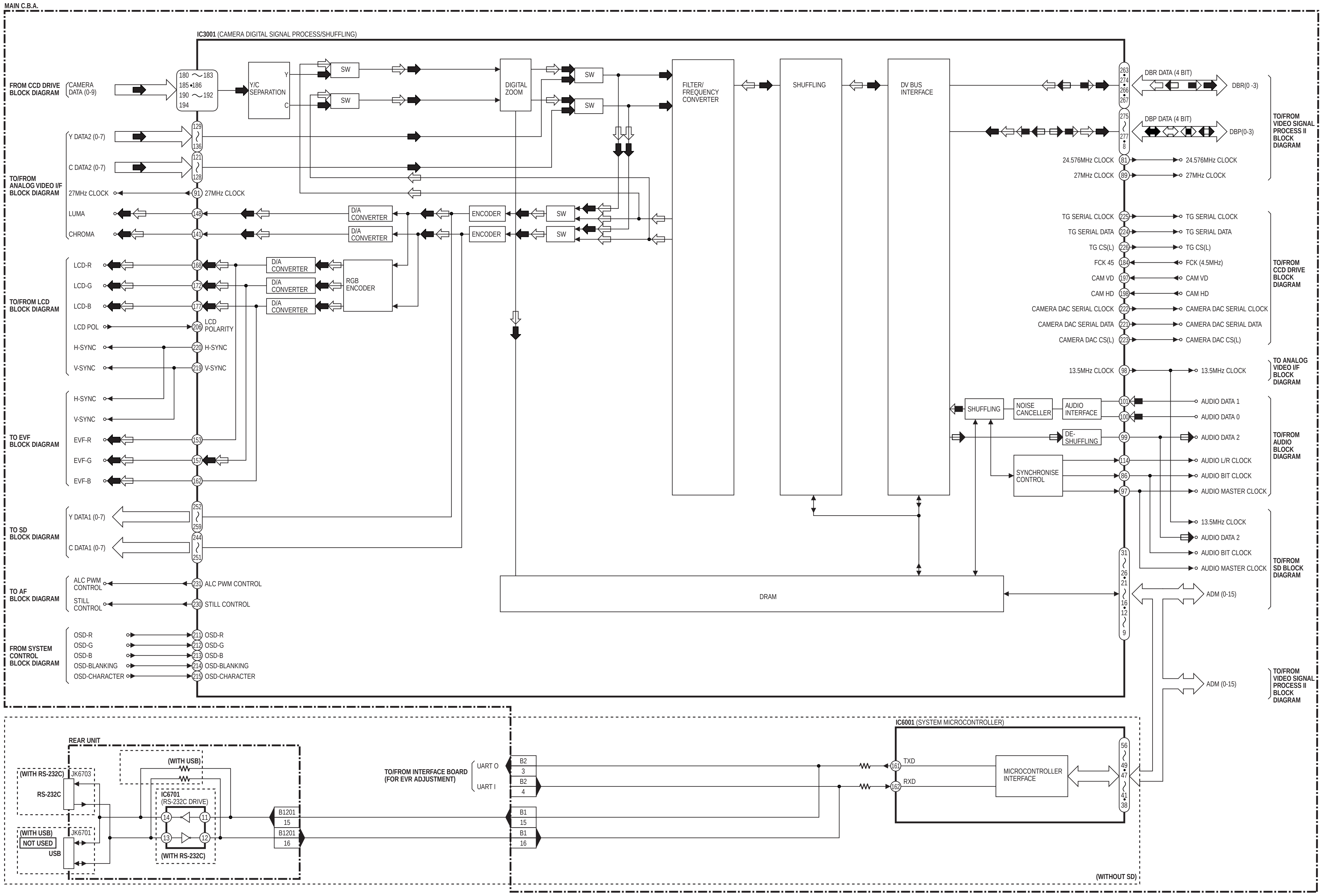
VOLTAGE CHART
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

CCD DRIVE BLOCK DIAGRAM


REC VIDEO(CAMERA) SIGNAL
CCD C.B.A.
MAIN C.B.A.
IC601 (CCD)
CCD IMAGE SENSOR
Q601
BUFFER
PIN
FP301
IC501 (CAMERA SIGNAL PROCESS)
DOUBLE SAMPLING HOLD
MUX
VGA
10BIT A/D CONVERTER
D/A CONVERTER
CLAMP
CAMERA DATA (10 BIT)
CAMERA DATA (0-9)
CAMERA DAC SERIAL CLOCK
CAMERA DAC SERIAL DATA
CAMERA DAC CS (L)
TO/FROM VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
IC301 (TIMING SIGNAL GENERATOR)
A/D CLOCK 1
OB CLAMP PULSE
R301
NOT USED
PRE BLANKING PULSE
SAMPLING PULSE 1
SAMPLING PULSE 2
TG SERIAL CLOCK
TG SERIAL DATA
TG CS (L)
V1 PULSE
CHARGE PULSE 1
V2 PULSE
V3 PULSE
CHARGE PULSE 2
V4 PULSE
SUB CONTROL PULSE
RESET PULSE
H1 PULSE
H2 PULSE
FCK
FCK (4.5MHz)
VD
CAM VD
HD
CAM HD
2FCK
IC302
36MHz OSC
6MHz CLOCK
TO SD BLOCK DIAGRAM
IC303 (CCD V-DRIVE)
LEVEL CHANGE
DRIVE
△V1
2.85 Vp-p
1 V
5 ms
R6167
VSUB CONTROL
FROM SYSTEM CONTROL BLOCK DIAGRAM

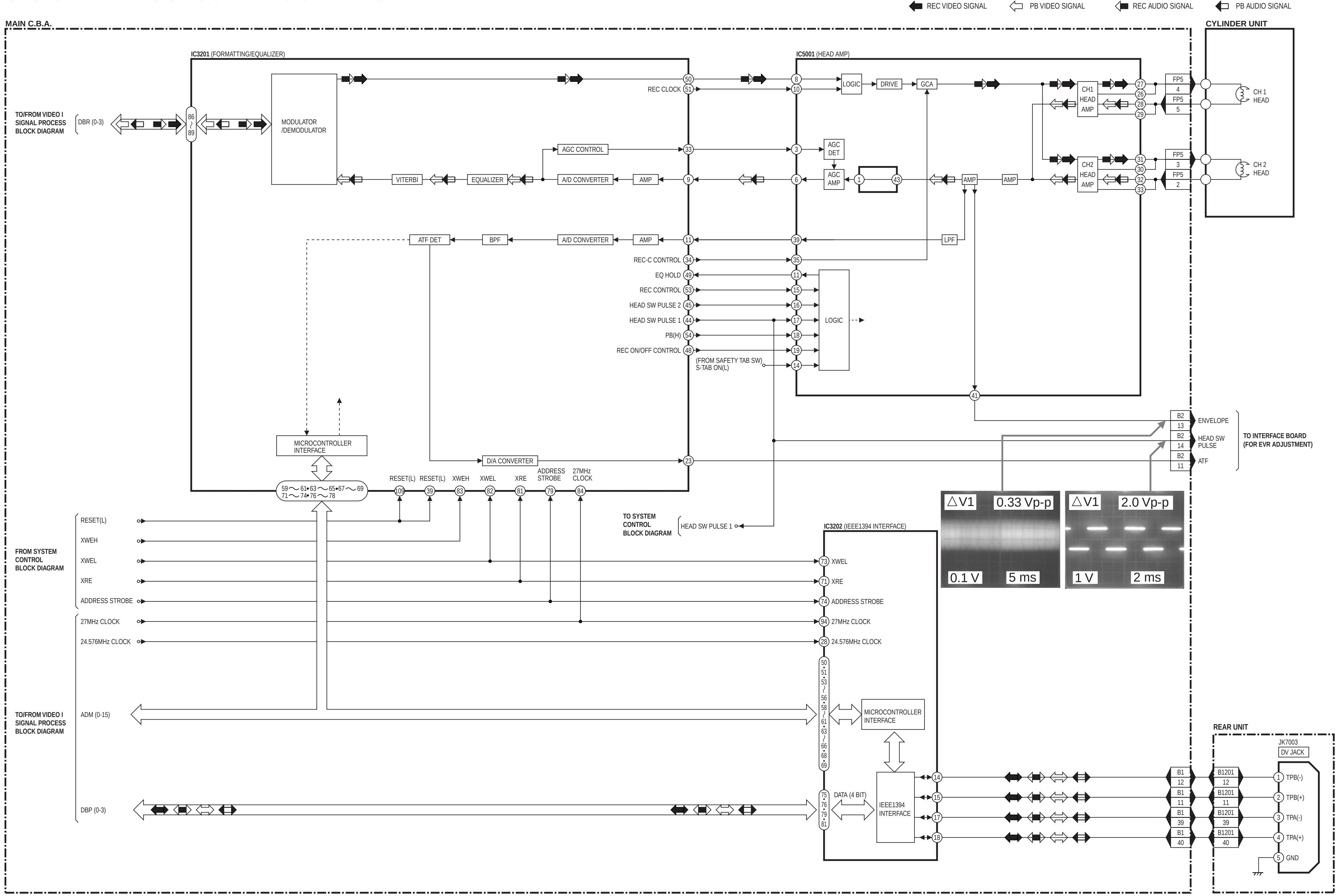
CCD DRIVE BLOCK DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

VIDEO SIGNAL PROCESS I BLOCK DIAGRAM


MAIN C.B.A.
IC3001 (CAMERA DIGITAL SIGNAL PROCESS/SHUFFLING)
FROM CCD DRIVE BLOCK DIAGRAM
CAMERA DATA (0-9)
180 ~ 183
185 • 186
190 ~ 192
194
Y/C SEPARATION
Y
C
SW
SW
DIGITAL ZOOM
SW
SW
FILTER/ FREQUENCY CONVERTER
SHUFFLING
DV BUS INTERFACE
263 • 274 • 266 • 267
DBR DATA (4 BIT)
DBR(0 -3)
275 ~ 277 • 8
DBP DATA (4 BIT)
DBP(0-3)
TO/FROM VIDEO SIGNAL PROCESS II BLOCK DIAGRAM
24.576MHz CLOCK 81 24.576MHz CLOCK
27MHz CLOCK 89 27MHz CLOCK
TO/FROM ANALOG VIDEO I/F BLOCK DIAGRAM
Y DATA2 (0-7) 129 ~ 136
C DATA2 (0-7) 121 ~ 128
27MHz CLOCK 91 27MHz CLOCK
LUMA 148
CHROMA 141
D/A CONVERTER
D/A CONVERTER
ENCODER
ENCODER
SW
SW
TO/FROM LCD BLOCK DIAGRAM
LCD-R 168
LCD-G 172
LCD-B 177
LCD POL 206 LCD POLARITY
H-SYNC 220 H-SYNC
V-SYNC 219 V-SYNC
D/A CONVERTER
D/A CONVERTER
D/A CONVERTER
RGB ENCODER
TO EVF BLOCK DIAGRAM
H-SYNC
V-SYNC
EVF-R 153
EVF-G 157
EVF-B 162
TO SD BLOCK DIAGRAM
Y DATA1 (0-7) 252 ~ 259
C DATA1 (0-7) 244 ~ 251
TO AF BLOCK DIAGRAM
ALC PWM CONTROL 231 ALC PWM CONTROL
STILL CONTROL 230 STILL CONTROL
FROM SYSTEM CONTROL BLOCK DIAGRAM
OSD-R 211 OSD-R
OSD-G 212 OSD-G
OSD-B 213 OSD-B
OSD-BLANKING 214 OSD-BLANKING
OSD-CHARACTER 215 OSD-CHARACTER
DRAM
TG SERIAL CLOCK 225 TG SERIAL CLOCK
TG SERIAL DATA 224 TG SERIAL DATA
TG CS(L) 226 TG CS(L)
FCK 45 184 FCK (4.5MHz)
CAM VD 197 CAM VD
CAM HD 198 CAM HD
CAMERA DAC SERIAL CLOCK 222 CAMERA DAC SERIAL CLOCK
CAMERA DAC SERIAL DATA 221 CAMERA DAC SERIAL DATA
CAMERA DAC CS(L) 223 CAMERA DAC CS(L)
TO/FROM CCD DRIVE BLOCK DIAGRAM
13.5MHz CLOCK 98 13.5MHz CLOCK
TO ANALOG VIDEO I/F BLOCK DIAGRAM
SHUFFLING
NOISE CANCELLER
AUDIO INTERFACE
DE-SHUFFLING
SYNCHRONISE CONTROL
101 AUDIO DATA 1
100 AUDIO DATA 0
99 AUDIO DATA 2
114 AUDIO L/R CLOCK
86 AUDIO BIT CLOCK
97 AUDIO MASTER CLOCK
TO/FROM AUDIO BLOCK DIAGRAM
13.5MHz CLOCK
AUDIO DATA 2
AUDIO BIT CLOCK
AUDIO MASTER CLOCK
TO/FROM SD BLOCK DIAGRAM
31 ~ 26 • 21 ~ 16 • 12 ~ 9
ADM (0-15)
ADM (0-15)
TO/FROM VIDEO SIGNAL PROCESS II BLOCK DIAGRAM
IC6001 (SYSTEM MICROCONTROLLER)
161 TXD
162 RXD
MICROCONTROLLER INTERFACE
56 ~ 49 • 47 ~ 41 • 38
(WITHOUT SD)
TO/FROM INTERFACE BOARD (FOR EVR ADJUSTMENT)
UART O
UART I
B2 3
B2 4
B1 15
B1 16
REAR UNIT
(WITH RS-232C) JK6703
RS-232C
(WITH USB) JK6701
NOT USED
USB
(WITH USB)
IC6701 (RS-232C DRIVE)
14 11 13 12
(WITH RS-232C)
B1201 15
B1201 16

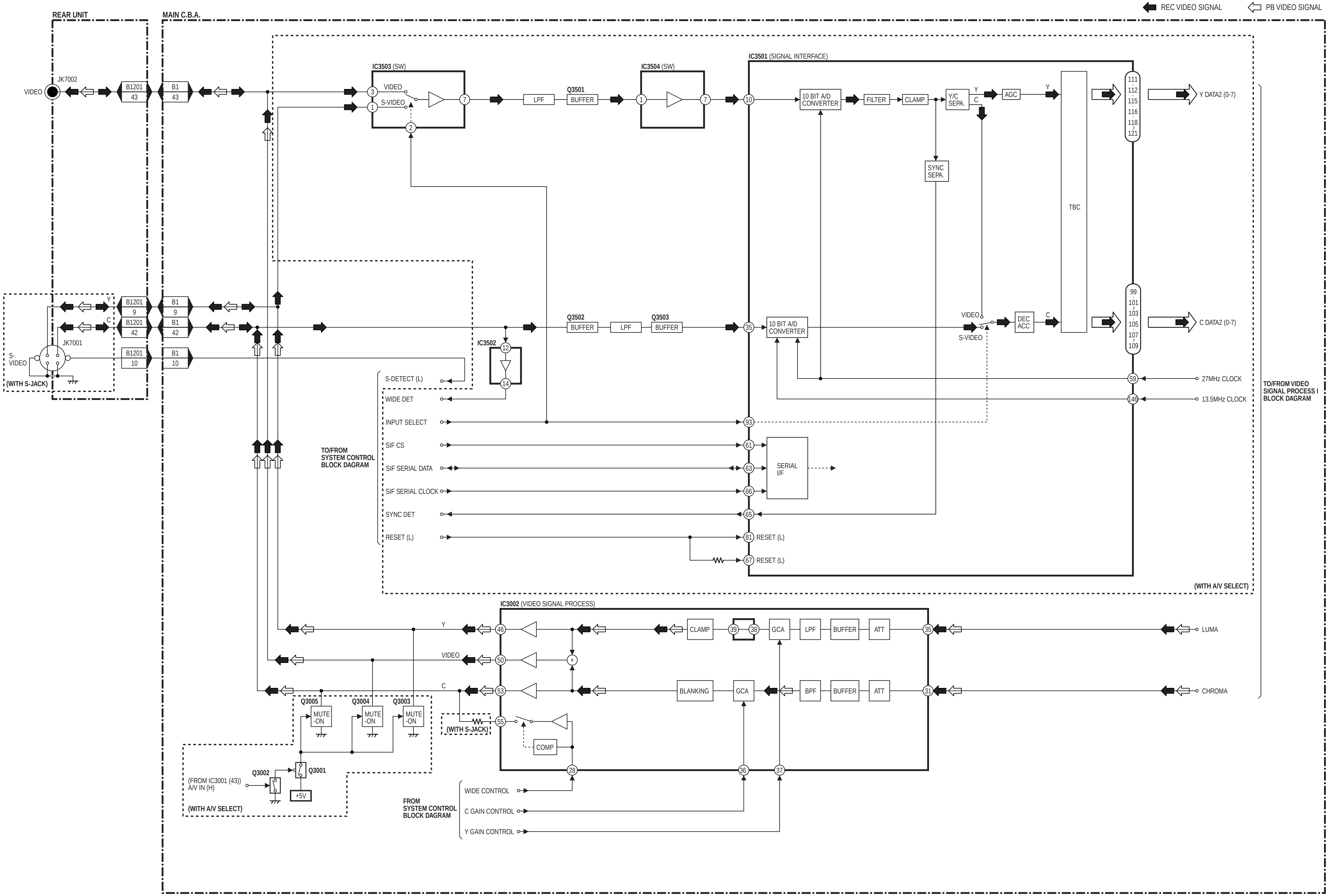
VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

VIDEO SIGNAL PROCESS II BLOCK DIAGRAM


REC VIDEO SIGNAL
PB VIDEO SIGNAL
REC AUDIO SIGNAL
PB AUDIO SIGNAL
MAIN C.B.A.
CYLINDER UNIT
IC3201 (FORMATTING/EQUALIZER)
IC5001 (HEAD AMP)
TO/FROM VIDEO I SIGNAL PROCESS BLOCK DIAGRAM
DBR (0-3)
MODULATOR /DEMODULATOR
REC CLOCK
AGC CONTROL
VITERBI
EQUALIZER
A/D CONVERTER
AMP
LOGIC
DRIVE
GCA
AGC DET
AGC AMP
CH1 HEAD AMP
CH2 HEAD AMP
FP5
CH 1 HEAD
CH 2 HEAD
ATF DET
BPF
LPF
REC-C CONTROL
EQ HOLD
REC CONTROL
HEAD SW PULSE 2
HEAD SW PULSE 1
PB(H)
REC ON/OFF CONTROL
(FROM SAFETY TAB SW) S-TAB ON(L)
MICROCONTROLLER INTERFACE
D/A CONVERTER
59～61•63～65•67～69
71～74•76～78
RESET(L)
XWEH
XWEL
XRE
ADDRESS STROBE
27MHz CLOCK
ENVELOPE
HEAD SW PULSE
ATF
B2
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
△V1 0.33 Vp-p
0.1 V 5 ms
△V1 2.0 Vp-p
1 V 2 ms
TO SYSTEM CONTROL BLOCK DIAGRAM
HEAD SW PULSE 1
IC3202 (IEEE1394 INTERFACE)
FROM SYSTEM CONTROL BLOCK DIAGRAM
24.576MHz CLOCK
TO/FROM VIDEO I SIGNAL PROCESS BLOCK DIAGRAM
ADM (0-15)
DBP (0-3)
DATA (4 BIT)
IEEE1394 INTERFACE
B1
B1201
REAR UNIT
JK7003
DV JACK
TPB(-)
TPB(+)
TPA(-)
TPA(+)
GND

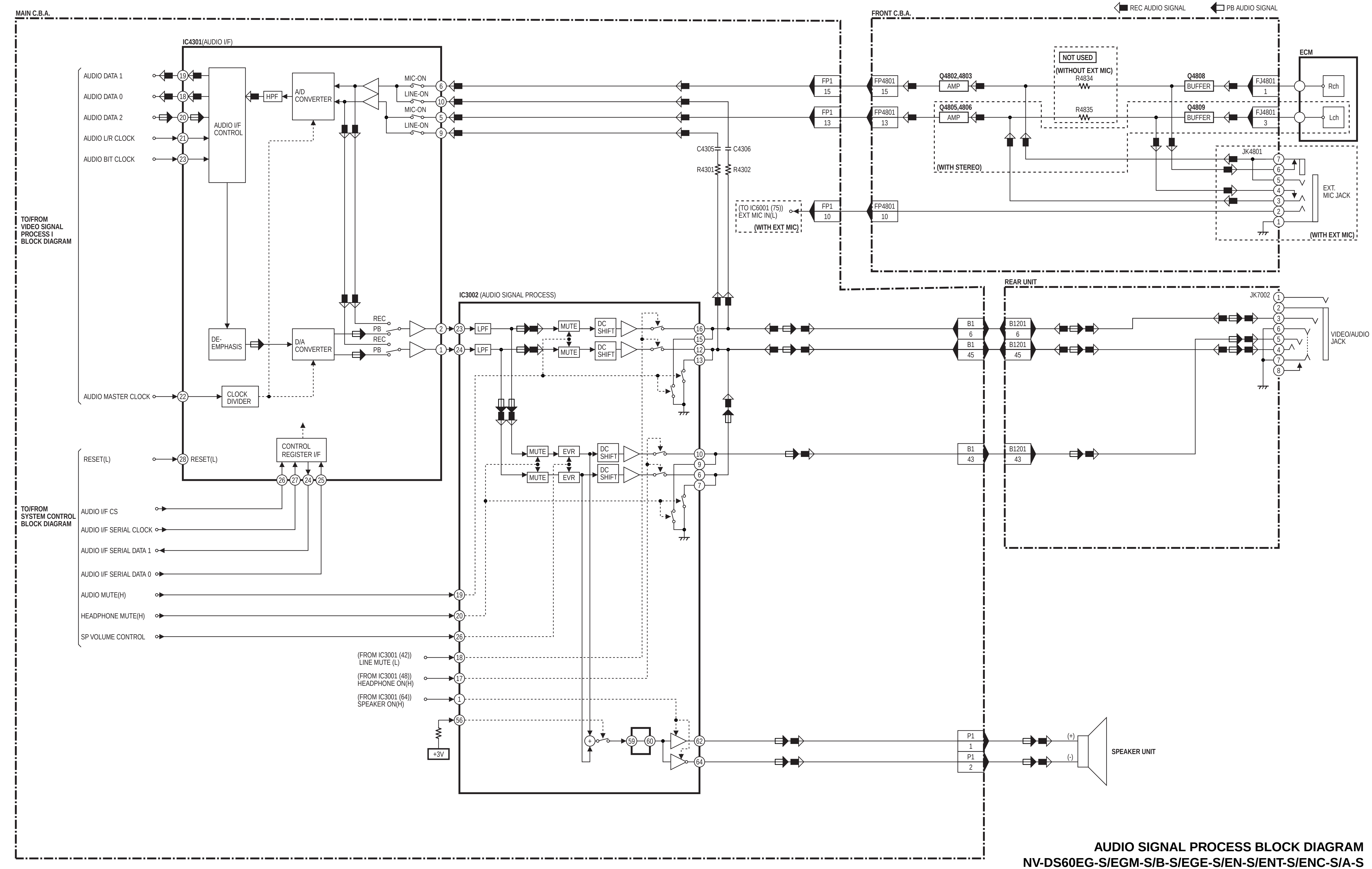
VIDEO SIGNAL PROCESS II BLOCK DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

ANALOG VIDEO I/F BLOCK DIAGRAM



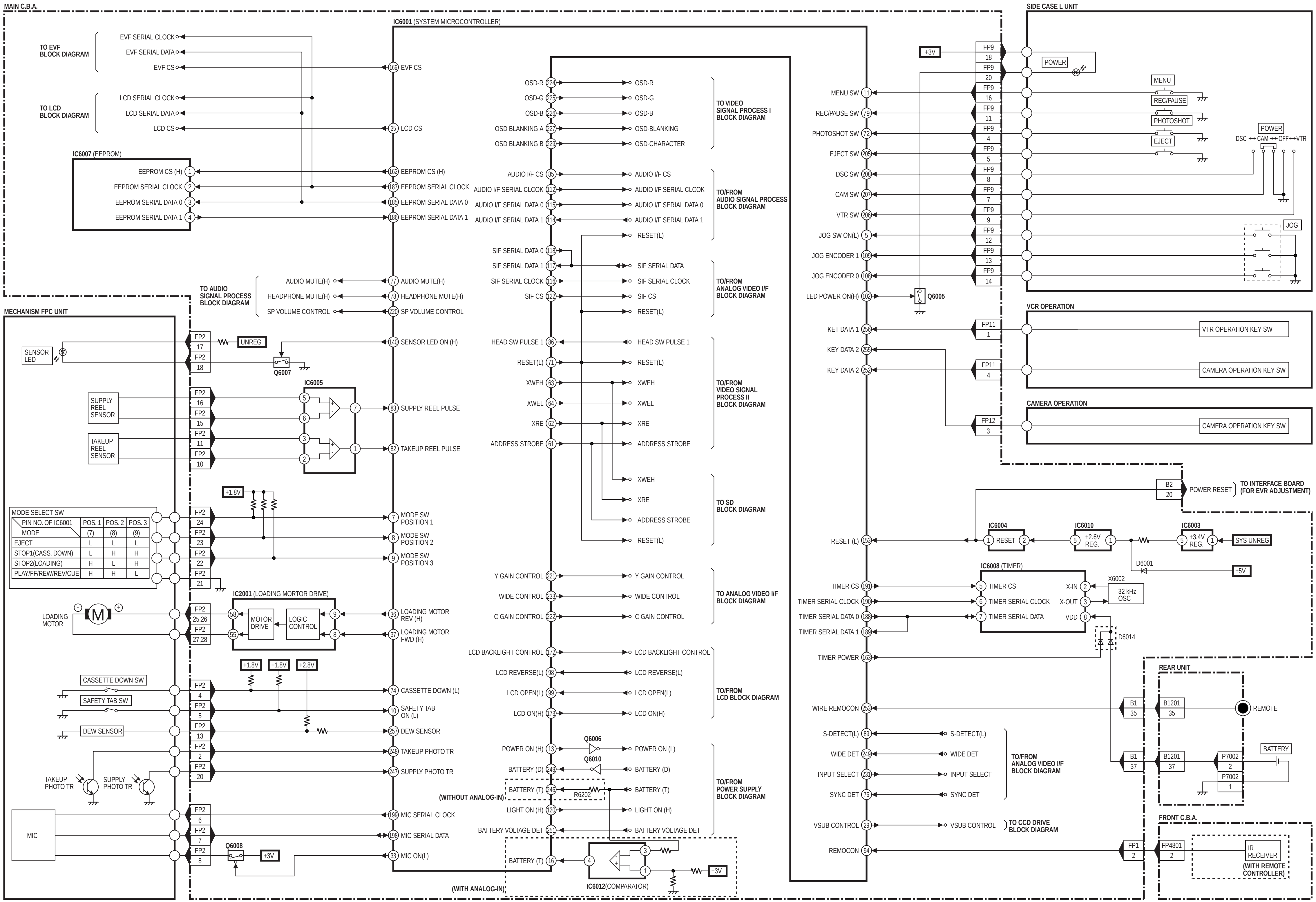
REC VIDEO SIGNAL
PB VIDEO SIGNAL
REAR UNIT
MAIN C.B.A.
VIDEO
JK7002
B1201
43
B1
43
IC3503 (SW)
VIDEO
S-VIDEO
3
1
2
7
LPF
Q3501
BUFFER
IC3504 (SW)
1
7
IC3501 (SIGNAL INTERFACE)
10
10 BIT A/D CONVERTER
FILTER
CLAMP
Y/C SEPA.
Y
C
AGC
Y
SYNC SEPA.
TBC
111
112
115
116
118
121
Y DATA2 (0-7)
Y
C
B1201
9
B1201
42
B1
9
B1
42
JK7001
S-VIDEO
B1201
10
B1
10
(WITH S-JACK)
IC3502
12
14
Q3502
BUFFER
LPF
Q3503
BUFFER
35
10 BIT A/D CONVERTER
VIDEO
S-VIDEO
DEC ACC
C
99
101
103
105
107
109
C DATA2 (0-7)
59
27MHz CLOCK
146
13.5MHz CLOCK
TO/FROM VIDEO SIGNAL PROCESS I BLOCK DAGRAM
S-DETECT (L)
WIDE DET
INPUT SELECT
93
TO/FROM SYSTEM CONTROL BLOCK DAGRAM
SIF CS
61
SIF SERIAL DATA
63
SERIAL I/F
SIF SERIAL CLOCK
66
SYNC DET
65
RESET (L)
81
RESET (L)
67
RESET (L)
(WITH A/V SELECT)
IC3002 (VIDEO SIGNAL PROCESS)
Y
46
CLAMP
39
38
GCA
LPF
BUFFER
ATT
35
LUMA
VIDEO
50
+
C
53
BLANKING
GCA
BPF
BUFFER
ATT
31
CHROMA
Q3005
Q3004
Q3003
MUTE -ON
MUTE -ON
MUTE -ON
(WITH S-JACK)
55
COMP
28
36
37
Q3002
Q3001
(FROM IC3001 (43)) A/V IN (H)
+5V
(WITH A/V SELECT)
FROM SYSTEM CONTROL BLOCK DAGRAM
WIDE CONTROL
C GAIN CONTROL
Y GAIN CONTROL

AUDIO SIGNAL PROCESS BLOCK DIAGRAM


MAIN C.B.A.
FRONT C.B.A.
REC AUDIO SIGNAL
PB AUDIO SIGNAL
IC4301(AUDIO I/F)
AUDIO DATA 1
AUDIO DATA 0
AUDIO DATA 2
AUDIO L/R CLOCK
AUDIO BIT CLOCK
AUDIO I/F CONTROL
HPF
A/D CONVERTER
MIC-ON
LINE-ON
MIC-ON
LINE-ON
DE-EMPHASIS
D/A CONVERTER
REC
PB
REC
PB
AUDIO MASTER CLOCK
CLOCK DIVIDER
CONTROL REGISTER I/F
RESET(L)
RESET(L)
TO/FROM VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
TO/FROM SYSTEM CONTROL BLOCK DIAGRAM
AUDIO I/F CS
AUDIO I/F SERIAL CLOCK
AUDIO I/F SERIAL DATA 1
AUDIO I/F SERIAL DATA 0
AUDIO MUTE(H)
HEADPHONE MUTE(H)
SP VOLUME CONTROL
(FROM IC3001 (42)) LINE MUTE (L)
(FROM IC3001 (48)) HEADPHONE ON(H)
(FROM IC3001 (64)) SPEAKER ON(H)
+3V
IC3002 (AUDIO SIGNAL PROCESS)
LPF
LPF
MUTE
MUTE
DC SHIFT
DC SHIFT
MUTE
EVR
DC SHIFT
MUTE
EVR
DC SHIFT
C4305
C4306
R4301
R4302
(TO IC6001 (75)) EXT MIC IN(L)
(WITH EXT MIC)
FP1 15
FP1 13
FP1 10
FP4801 15
FP4801 13
FP4801 10
Q4802,4803
AMP
Q4805,4806
AMP
(WITH STEREO)
NOT USED
(WITHOUT EXT MIC)
R4834
R4835
Q4808
BUFFER
Q4809
BUFFER
FJ4801 1
FJ4801 3
ECM
Rch
Lch
JK4801
EXT. MIC JACK
(WITH EXT MIC)
REAR UNIT
JK7002
VIDEO/AUDIO JACK
B1 6
B1 45
B1 43
B1201 6
B1201 45
B1201 43
P1 1
P1 2
(+)
(-)
SPEAKER UNIT

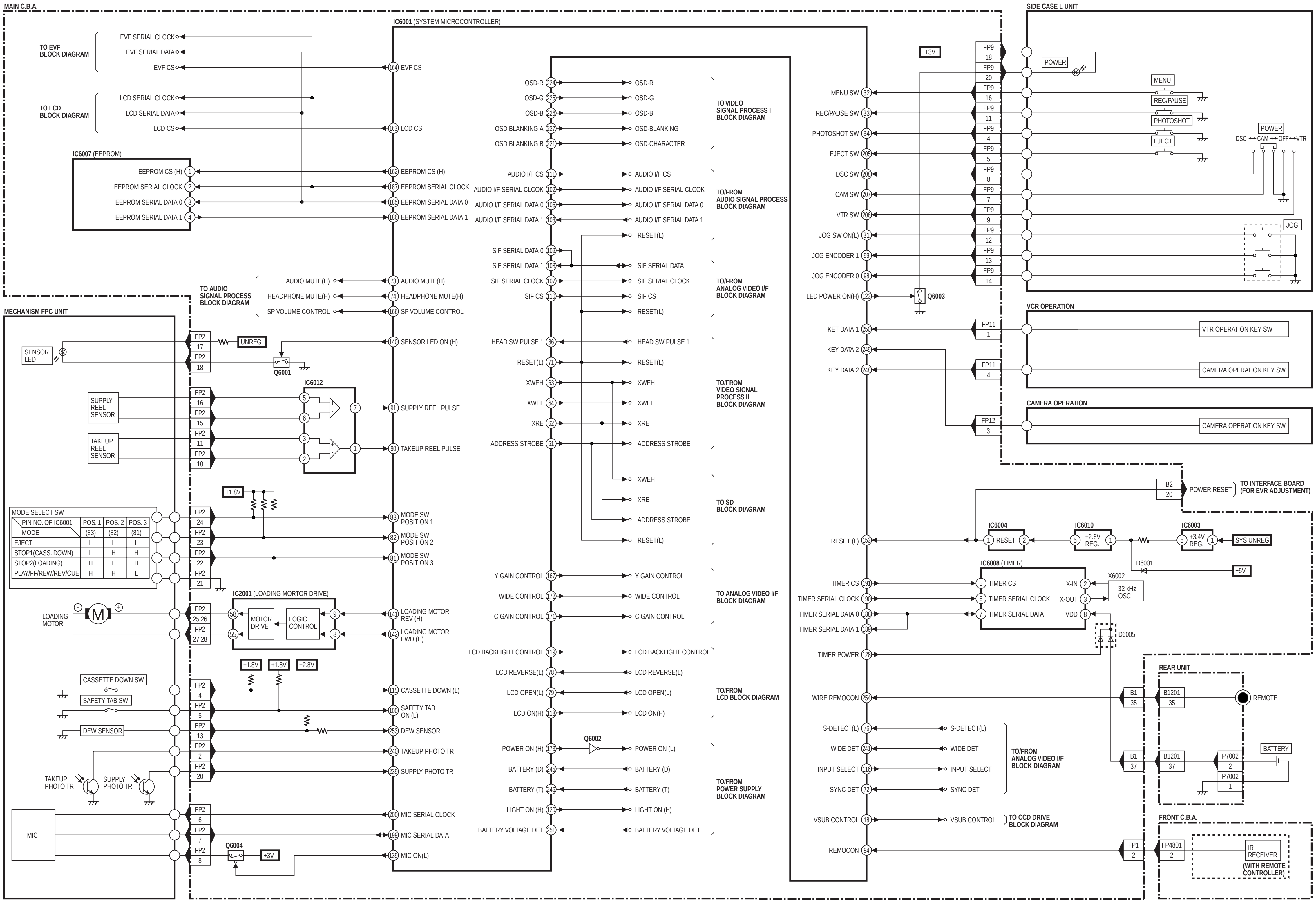
AUDIO SIGNAL PROCESS BLOCK DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

SYSTEM CONTROL BLOCK DIAGRAM (Models: NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)

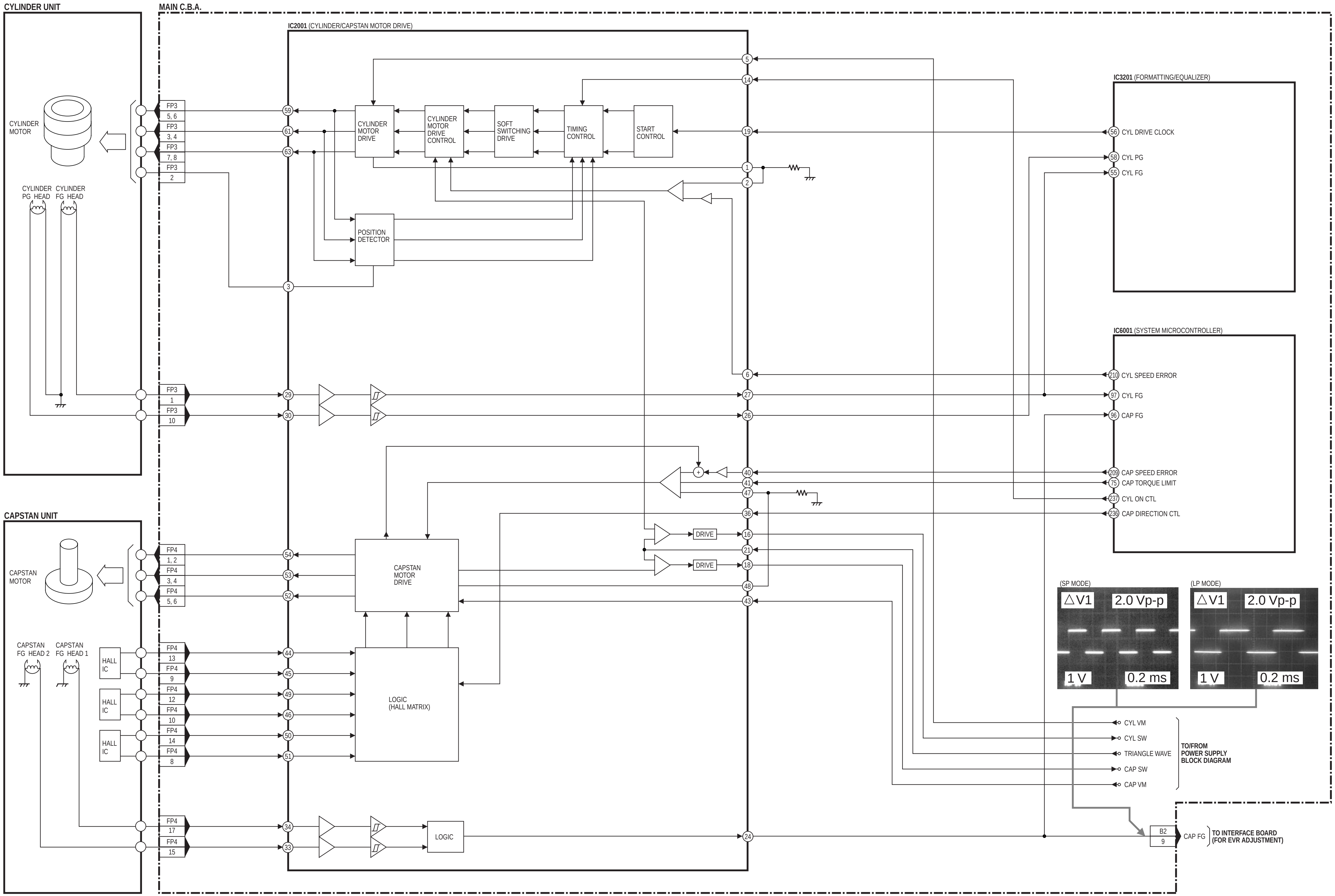


MAIN C.B.A.
TO EVF BLOCK DIAGRAM
EVF SERIAL CLOCK
EVF SERIAL DATA
EVF CS
TO LCD BLOCK DIAGRAM
LCD SERIAL CLOCK
LCD SERIAL DATA
LCD CS
IC6007 (EEPROM)
EEPROM CS (H)
EEPROM SERIAL CLOCK
EEPROM SERIAL DATA 0
EEPROM SERIAL DATA 1
IC6001 (SYSTEM MICROCONTROLLER)
166 EVF CS
35 LCD CS
162 EEPROM CS (H)
187 EEPROM SERIAL CLOCK
185 EEPROM SERIAL DATA 0
186 EEPROM SERIAL DATA 1
OSD-R 224
OSD-G 225
OSD-B 226
OSD BLANKING A 227
OSD BLANKING B 229
OSD-R
OSD-G
OSD-B
OSD-BLANKING
OSD-CHARACTER
TO VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
AUDIO I/F CS 85
AUDIO I/F SERIAL CLCOK 112
AUDIO I/F SERIAL DATA 0 115
AUDIO I/F SERIAL DATA 1 114
AUDIO I/F CS
AUDIO I/F SERIAL CLCOK
AUDIO I/F SERIAL DATA 0
AUDIO I/F SERIAL DATA 1
RESET(L)
TO/FROM AUDIO SIGNAL PROCESS BLOCK DIAGRAM
SIF SERIAL DATA 0 118
SIF SERIAL DATA 1 117
SIF SERIAL CLOCK 116
SIF CS 122
SIF SERIAL DATA
SIF SERIAL CLOCK
SIF CS
RESET(L)
TO/FROM ANALOG VIDEO I/F BLOCK DIAGRAM
TO AUDIO SIGNAL PROCESS BLOCK DIAGRAM
AUDIO MUTE(H)
HEADPHONE MUTE(H)
SP VOLUME CONTROL
77 AUDIO MUTE(H)
78 HEADPHONE MUTE(H)
220 SP VOLUME CONTROL
MECHANISM FPC UNIT
SENSOR LED
FP2 17
FP2 18
UNREG
Q6007
140 SENSOR LED ON (H)
HEAD SW PULSE 1 86
RESET(L) 71
XWEH 63
XWEL 64
XRE 62
ADDRESS STROBE 61
HEAD SW PULSE 1
RESET(L)
XWEH
XWEL
XRE
ADDRESS STROBE
TO/FROM VIDEO SIGNAL PROCESS II BLOCK DIAGRAM
SUPPLY REEL SENSOR
TAKEUP REEL SENSOR
FP2 16
FP2 15
FP2 11
FP2 10
IC6005
83 SUPPLY REEL PULSE
82 TAKEUP REEL PULSE
XWEH
XRE
ADDRESS STROBE
RESET(L)
TO SD BLOCK DIAGRAM
+1.8V
MODE SELECT SW
PIN NO. OF IC6001 | POS. 1 | POS. 2 | POS. 3
MODE | (7) | (8) | (9)
EJECT | L | L | L
STOP1(CASS. DOWN) | L | H | H
STOP2(LOADING) | H | L | H
PLAY/FF/REW/REV/CUE | H | H | L
FP2 24
FP2 23
FP2 22
FP2 21
7 MODE SW POSITION 1
8 MODE SW POSITION 2
9 MODE SW POSITION 3
Y GAIN CONTROL 221
WIDE CONTROL 223
C GAIN CONTROL 222
Y GAIN CONTROL
WIDE CONTROL
C GAIN CONTROL
TO ANALOG VIDEO I/F BLOCK DIAGRAM
LOADING MOTOR
M
FP2 25,26
FP2 27,28
IC2001 (LOADING MORTOR DRIVE)
MOTOR DRIVE
LOGIC CONTROL
36 LOADING MOTOR REV (H)
37 LOADING MOTOR FWD (H)
LCD BACKLIGHT CONTROL 172
LCD REVERSE(L) 98
LCD OPEN(L) 99
LCD ON(H) 173
LCD BACKLIGHT CONTROL
LCD REVERSE(L)
LCD OPEN(L)
LCD ON(H)
TO/FROM LCD BLOCK DIAGRAM
+1.8V
+1.8V
+2.8V
CASSETTE DOWN SW
SAFETY TAB SW
DEW SENSOR
FP2 4
FP2 5
FP2 13
FP2 2
FP2 20
74 CASSETTE DOWN (L)
10 SAFETY TAB ON (L)
257 DEW SENSOR
248 TAKEUP PHOTO TR
247 SUPPLY PHOTO TR
TAKEUP PHOTO TR
SUPPLY PHOTO TR
POWER ON (H) 13
BATTERY (D) 249
BATTERY (T) 246
LIGHT ON (H) 120
BATTERY VOLTAGE DET 251
Q6006
Q6010
R6202
(WITHOUT ANALOG-IN)
POWER ON (L)
BATTERY (D)
BATTERY (T)
LIGHT ON (H)
BATTERY VOLTAGE DET
TO/FROM POWER SUPPLY BLOCK DIAGRAM
MIC
FP2 6
FP2 7
FP2 8
Q6008
+3V
199 MIC SERIAL CLOCK
198 MIC SERIAL DATA
33 MIC ON(L)
BATTERY (T) 16
IC6012(COMPARATOR)
+3V
(WITH ANALOG-IN)
SIDE CASE L UNIT
+3V
FP9 18
FP9 20
POWER
MENU SW 11
REC/PAUSE SW 79
PHOTOSHOT SW 72
EJECT SW 205
DSC SW 208
CAM SW 207
VTR SW 206
JOG SW ON(L) 5
JOG ENCODER 1 109
JOG ENCODER 0 108
LED POWER ON(H) 102
Q6005
FP9 16
FP9 11
FP9 4
FP9 5
FP9 8
FP9 7
FP9 9
FP9 12
FP9 13
FP9 14
MENU
REC/PAUSE
PHOTOSHOT
EJECT
POWER
DSC CAM OFF VTR
JOG
VCR OPERATION
KET DATA 1 256
KEY DATA 2 255
KEY DATA 2 252
FP11 1
FP11 4
VTR OPERATION KEY SW
CAMERA OPERATION KEY SW
CAMERA OPERATION
FP12 3
CAMERA OPERATION KEY SW
B2 20
POWER RESET
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
RESET (L) 153
IC6004 RESET
IC6010 +2.6V REG.
IC6003 +3.4V REG.
SYS UNREG
D6001
+5V
IC6008 (TIMER)
TIMER CS 191
TIMER SERIAL CLOCK 190
TIMER SERIAL DATA 0 188
TIMER SERIAL DATA 1 189
TIMER POWER 163
TIMER CS
TIMER SERIAL CLOCK
TIMER SERIAL DATA
X-IN
X-OUT
VDD
X6002
32 kHz OSC
D6014
REAR UNIT
WIRE REMOCON 253
B1 35
B1201 35
REMOTE
S-DETECT(L) 89
WIDE DET 249
INPUT SELECT 231
SYNC DET 76
S-DETECT(L)
WIDE DET
INPUT SELECT
SYNC DET
TO/FROM ANALOG VIDEO I/F BLOCK DIAGRAM
B1 37
B1201 37
P7002 2
P7002 1
BATTERY
VSUB CONTROL 29
VSUB CONTROL
TO CCD DRIVE BLOCK DIAGRAM
FRONT C.B.A.
REMOCON 94
FP1 2
FP4801 2
IR RECEIVER
(WITH REMOTE CONTROLLER)

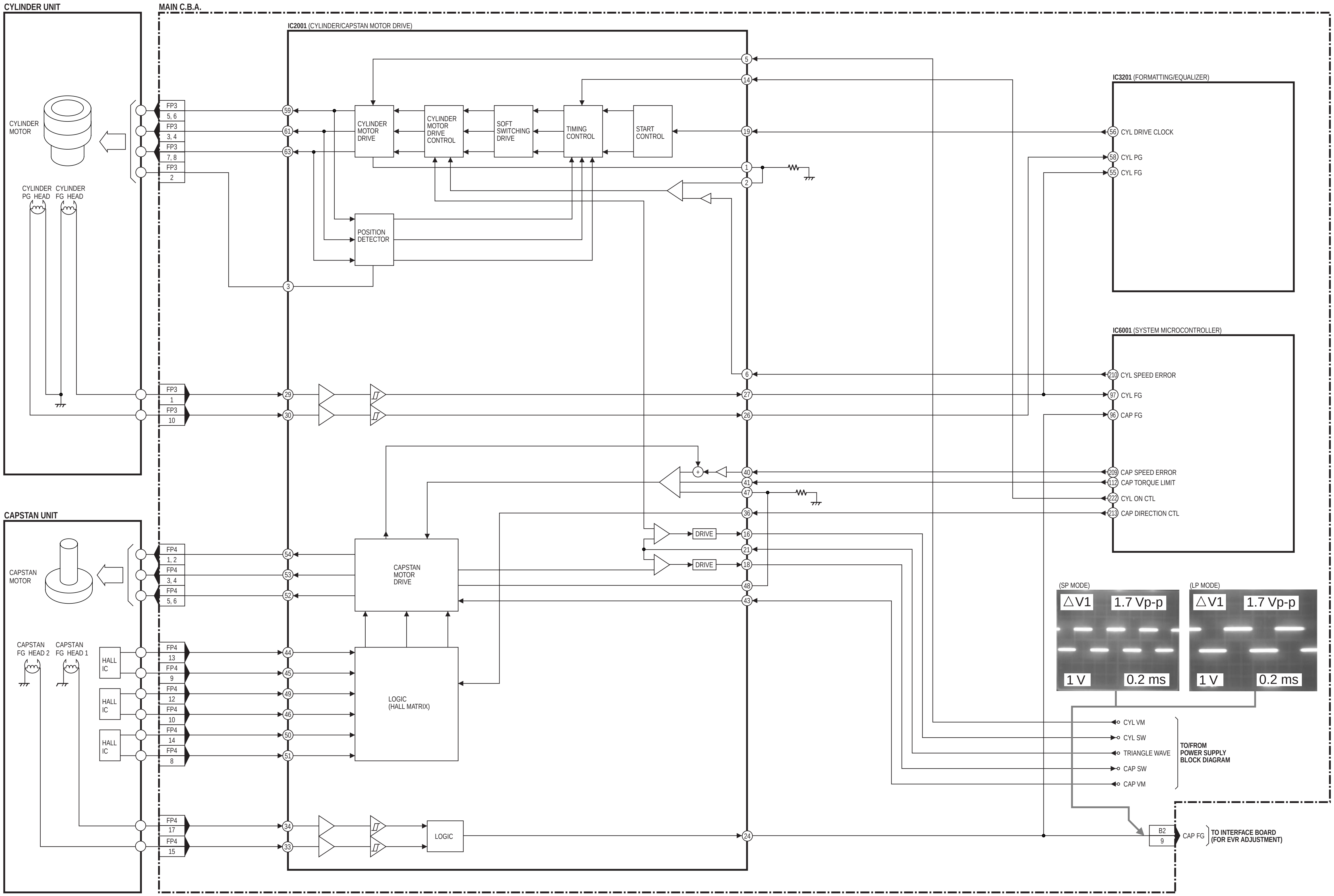
SYSTEM CONTROL BLOCK DIAGRAM (Models: NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)


MAIN C.B.A.
TO EVF BLOCK DIAGRAM
EVF SERIAL CLOCK
EVF SERIAL DATA
EVF CS
TO LCD BLOCK DIAGRAM
LCD SERIAL CLOCK
LCD SERIAL DATA
LCD CS
IC6007 (EEPROM)
EEPROM CS (H) 1
EEPROM SERIAL CLOCK 2
EEPROM SERIAL DATA 0 3
EEPROM SERIAL DATA 1 4
IC6001 (SYSTEM MICROCONTROLLER)
164 EVF CS
163 LCD CS
162 EEPROM CS (H)
187 EEPROM SERIAL CLOCK
185 EEPROM SERIAL DATA 0
186 EEPROM SERIAL DATA 1
TO AUDIO SIGNAL PROCESS BLOCK DIAGRAM
AUDIO MUTE(H)
HEADPHONE MUTE(H)
SP VOLUME CONTROL
73 AUDIO MUTE(H)
74 HEADPHONE MUTE(H)
166 SP VOLUME CONTROL
OSD-R 224
OSD-G 225
OSD-B 226
OSD BLANKING A 227
OSD BLANKING B 221
OSD-R
OSD-G
OSD-B
OSD-BLANKING
OSD-CHARACTER
TO VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
AUDIO I/F CS 111
AUDIO I/F SERIAL CLCOK 102
AUDIO I/F SERIAL DATA 0 106
AUDIO I/F SERIAL DATA 1 103
AUDIO I/F CS
AUDIO I/F SERIAL CLCOK
AUDIO I/F SERIAL DATA 0
AUDIO I/F SERIAL DATA 1
TO/FROM AUDIO SIGNAL PROCESS BLOCK DIAGRAM
RESET(L)
SIF SERIAL DATA 0 109
SIF SERIAL DATA 1 108
SIF SERIAL CLOCK 107
SIF CS 110
SIF SERIAL DATA
SIF SERIAL CLOCK
SIF CS
RESET(L)
TO/FROM ANALOG VIDEO I/F BLOCK DIAGRAM
HEAD SW PULSE 1 86
RESET(L) 71
XWEH 63
XWEL 64
XRE 62
ADDRESS STROBE 61
HEAD SW PULSE 1
RESET(L)
XWEH
XWEL
XRE
ADDRESS STROBE
TO/FROM VIDEO SIGNAL PROCESS II BLOCK DIAGRAM
XWEH
XRE
ADDRESS STROBE
RESET(L)
TO SD BLOCK DIAGRAM
Y GAIN CONTROL 167
WIDE CONTROL 172
C GAIN CONTROL 171
Y GAIN CONTROL
WIDE CONTROL
C GAIN CONTROL
TO ANALOG VIDEO I/F BLOCK DIAGRAM
LCD BACKLIGHT CONTROL 119
LCD REVERSE(L) 78
LCD OPEN(L) 79
LCD ON(H) 118
LCD BACKLIGHT CONTROL
LCD REVERSE(L)
LCD OPEN(L)
LCD ON(H)
TO/FROM LCD BLOCK DIAGRAM
POWER ON (H) 173
BATTERY (D) 245
BATTERY (T) 246
LIGHT ON (H) 120
BATTERY VOLTAGE DET 251
Q6002
POWER ON (L)
BATTERY (D)
BATTERY (T)
LIGHT ON (H)
BATTERY VOLTAGE DET
TO/FROM POWER SUPPLY BLOCK DIAGRAM
MECHANISM FPC UNIT
SENSOR LED
FP2 17
FP2 18
UNREG
Q6001
140 SENSOR LED ON (H)
IC6012
SUPPLY REEL SENSOR
TAKEUP REEL SENSOR
FP2 16
FP2 15
FP2 11
FP2 10
91 SUPPLY REEL PULSE
90 TAKEUP REEL PULSE
+1.8V
MODE SELECT SW
PIN NO. OF IC6001 | POS. 1 (83) | POS. 2 (82) | POS. 3 (81)
MODE
EJECT | L | L | L
STOP1(CASS. DOWN) | L | H | H
STOP2(LOADING) | H | L | H
PLAY/FF/REW/REV/CUE | H | H | L
FP2 24
FP2 23
FP2 22
FP2 21
83 MODE SW POSITION 1
82 MODE SW POSITION 2
81 MODE SW POSITION 3
IC2001 (LOADING MORTOR DRIVE)
LOADING MOTOR
M
FP2 25,26
FP2 27,28
58
55
MOTOR DRIVE
LOGIC CONTROL
9
8
141 LOADING MOTOR REV (H)
142 LOADING MOTOR FWD (H)
+1.8V
+1.8V
+2.8V
CASSETTE DOWN SW
SAFETY TAB SW
DEW SENSOR
FP2 4
FP2 5
FP2 13
FP2 2
FP2 20
115 CASSETTE DOWN (L)
100 SAFETY TAB ON (L)
253 DEW SENSOR
240 TAKEUP PHOTO TR
239 SUPPLY PHOTO TR
TAKEUP PHOTO TR
SUPPLY PHOTO TR
MIC
FP2 6
FP2 7
FP2 8
Q6004
+3V
200 MIC SERIAL CLOCK
199 MIC SERIAL DATA
139 MIC ON(L)
SIDE CASE L UNIT
+3V
POWER
FP9 18
FP9 20
FP9 16
FP9 11
FP9 4
FP9 5
FP9 8
FP9 7
FP9 9
FP9 12
FP9 13
FP9 14
MENU
REC/PAUSE
PHOTOSHOT
EJECT
POWER
DSC CAM OFF VTR
JOG
MENU SW 32
REC/PAUSE SW 33
PHOTOSHOT SW 34
EJECT SW 205
DSC SW 208
CAM SW 207
VTR SW 206
JOG SW ON(L) 31
JOG ENCODER 1 99
JOG ENCODER 0 98
LED POWER ON(H) 123
Q6003
VCR OPERATION
KET DATA 1 250
KEY DATA 2 249
KEY DATA 2 248
FP11 1
FP11 4
VTR OPERATION KEY SW
CAMERA OPERATION KEY SW
CAMERA OPERATION
FP12 3
CAMERA OPERATION KEY SW
B2 20
POWER RESET
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
RESET (L) 153
IC6004
1 RESET 2
IC6010
5 +2.6V REG. 1
IC6003
5 +3.4V REG. 1
SYS UNREG
D6001
+5V
IC6008 (TIMER)
TIMER CS 191
TIMER SERIAL CLOCK 190
TIMER SERIAL DATA 0 188
TIMER SERIAL DATA 1 189
5 TIMER CS
6 TIMER SERIAL CLOCK
7 TIMER SERIAL DATA
X-IN 2
X-OUT 3
VDD 8
X6002
32 kHz OSC
D6005
TIMER POWER 128
REAR UNIT
WIRE REMOCON 254
B1 35
B1201 35
REMOTE
S-DETECT(L) 76
WIDE DET 241
INPUT SELECT 116
SYNC DET 72
S-DETECT(L)
WIDE DET
INPUT SELECT
SYNC DET
TO/FROM ANALOG VIDEO I/F BLOCK DIAGRAM
B1 37
B1201 37
P7002 2
P7002 1
BATTERY
VSUB CONTROL 18
VSUB CONTROL
TO CCD DRIVE BLOCK DIAGRAM
FRONT C.B.A.
REMOCON 94
FP1 2
FP4801 2
IR RECEIVER
(WITH REMOTE CONTROLLER)

SERVO BLOCK DIAGRAM (Models: NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)

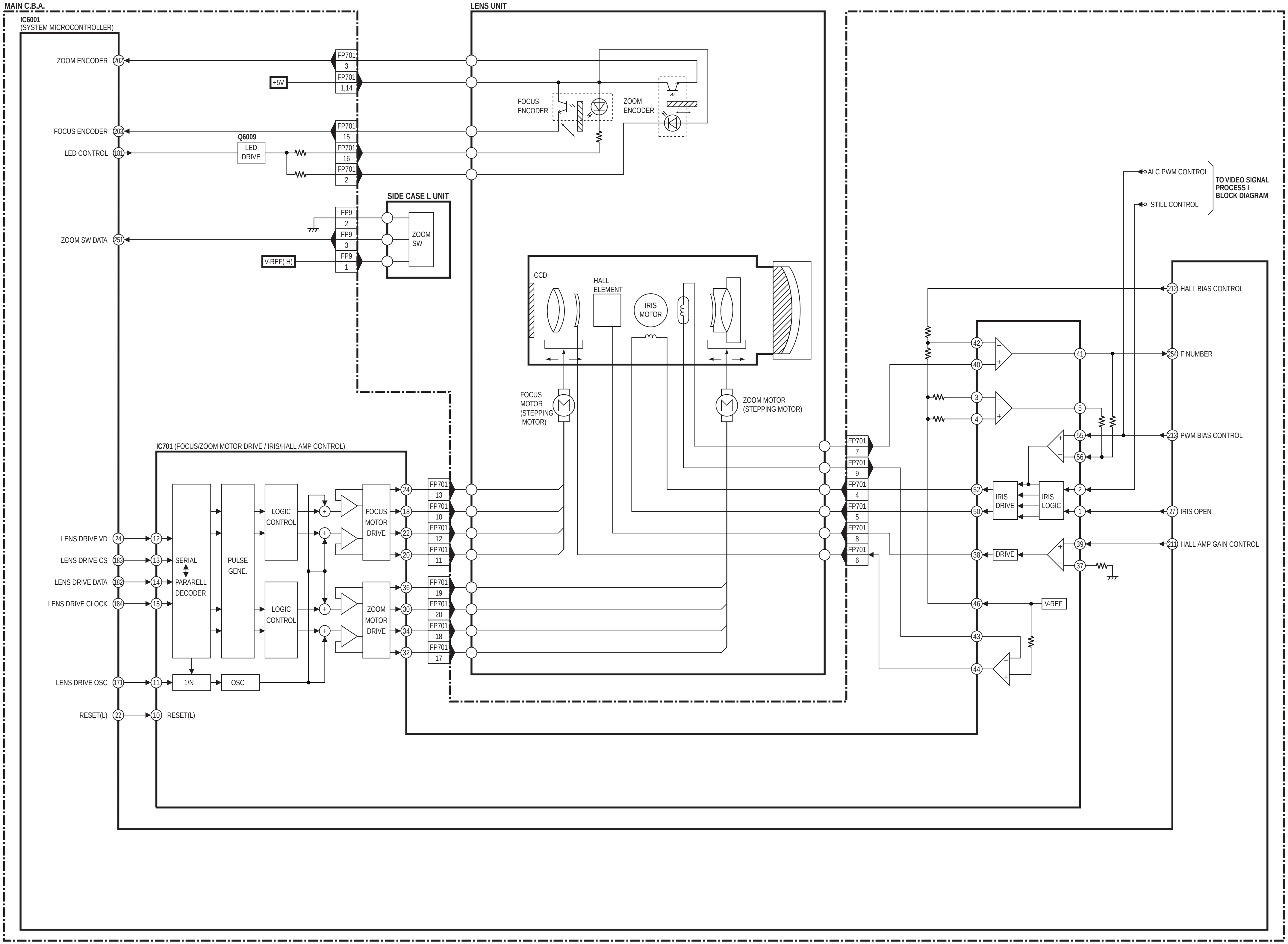

CYLINDER UNIT
MAIN C.B.A.
IC2001 (CYLINDER/CAPSTAN MOTOR DRIVE)
CYLINDER MOTOR
CYLINDER PG HEAD
CYLINDER FG HEAD
FP3
5, 6
3, 4
7, 8
2
1
10
CYLINDER MOTOR DRIVE
CYLINDER MOTOR DRIVE CONTROL
SOFT SWITCHING DRIVE
TIMING CONTROL
START CONTROL
POSITION DETECTOR
IC3201 (FORMATTING/EQUALIZER)
CYL DRIVE CLOCK
CYL PG
CYL FG
IC6001 (SYSTEM MICROCONTROLLER)
CYL SPEED ERROR
CYL FG
CAP FG
CAP SPEED ERROR
CAP TORQUE LIMIT
CYL ON CTL
CAP DIRECTION CTL
CAPSTAN UNIT
CAPSTAN MOTOR
FP4
1, 2
3, 4
5, 6
13
9
12
10
14
8
17
15
CAPSTAN FG HEAD 2
CAPSTAN FG HEAD 1
HALL IC
CAPSTAN MOTOR DRIVE
LOGIC (HALL MATRIX)
LOGIC
DRIVE
(SP MODE)
(LP MODE)
△V1
2.0 Vp-p
1 V
0.2 ms
CYL VM
CYL SW
TRIANGLE WAVE
CAP SW
CAP VM
TO/FROM POWER SUPPLY BLOCK DIAGRAM
B2
9
CAP FG
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
59
61
63
3
5
14
19
1
2
6
29
30
27
26
40
41
47
36
16
21
18
48
43
54
53
52
44
45
49
46
50
51
34
33
24
56
58
55
210
97
96
209
75
237
236

SERVO BLOCK DIAGRAM (Models: NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)

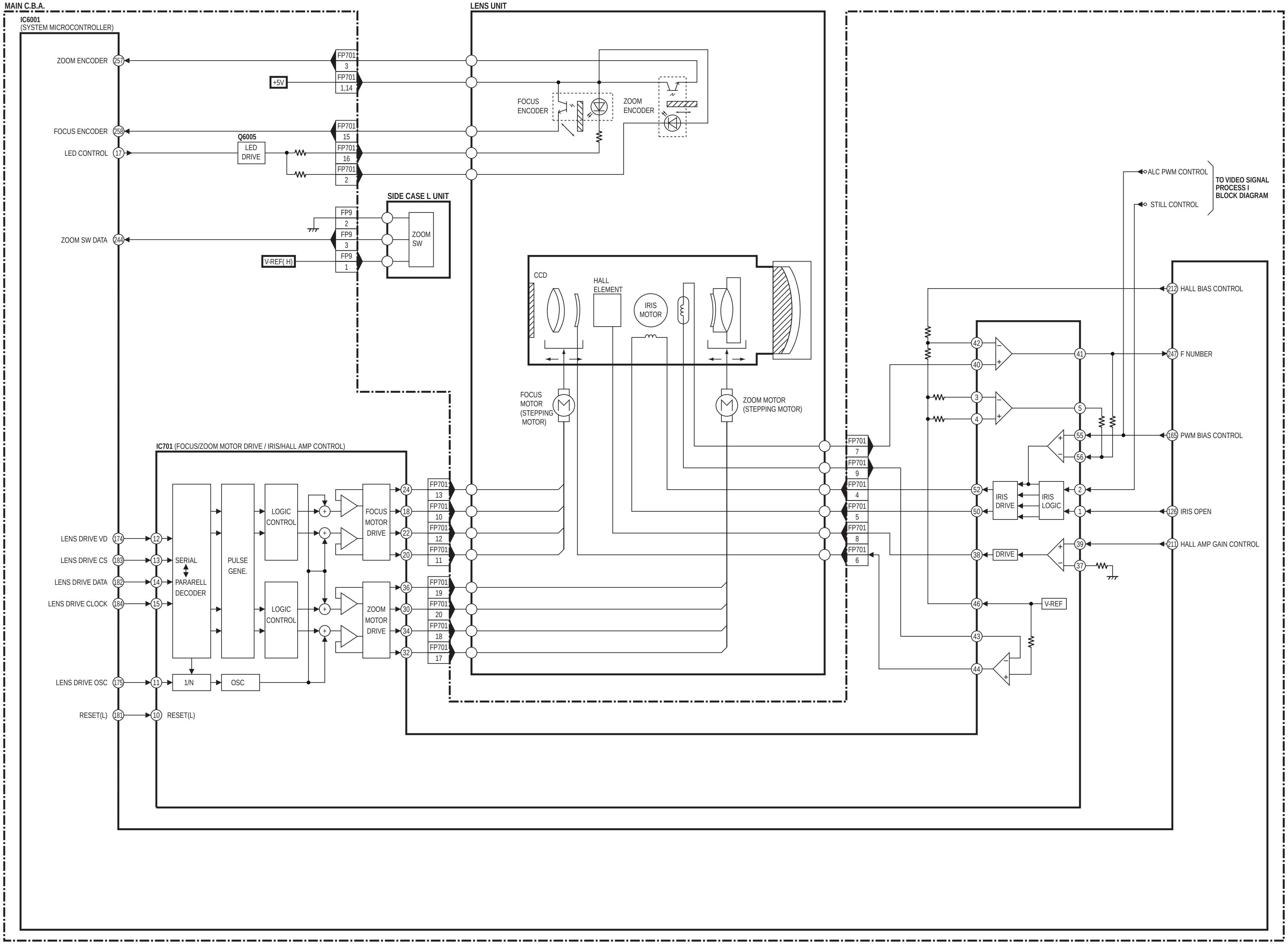

CYLINDER UNIT
MAIN C.B.A.
IC2001 (CYLINDER/CAPSTAN MOTOR DRIVE)
CYLINDER MOTOR
CYLINDER PG HEAD
CYLINDER FG HEAD
FP3
5, 6
3, 4
7, 8
2
1
10
CYLINDER MOTOR DRIVE
CYLINDER MOTOR DRIVE CONTROL
SOFT SWITCHING DRIVE
TIMING CONTROL
START CONTROL
POSITION DETECTOR
59
61
63
3
29
30
5
14
19
1
2
6
27
26
40
41
47
36
16
21
18
48
43
24
IC3201 (FORMATTING/EQUALIZER)
56 CYL DRIVE CLOCK
58 CYL PG
55 CYL FG
IC6001 (SYSTEM MICROCONTROLLER)
210 CYL SPEED ERROR
97 CYL FG
96 CAP FG
209 CAP SPEED ERROR
112 CAP TORQUE LIMIT
222 CYL ON CTL
213 CAP DIRECTION CTL
DRIVE
DRIVE
CAPSTAN UNIT
CAPSTAN MOTOR
FP4
1, 2
3, 4
5, 6
13
9
12
10
14
8
17
15
CAPSTAN FG HEAD 2
CAPSTAN FG HEAD 1
HALL IC
HALL IC
HALL IC
54
53
52
44
45
49
46
50
51
34
33
CAPSTAN MOTOR DRIVE
LOGIC (HALL MATRIX)
LOGIC
(SP MODE)
△V1 1.7 Vp-p
1 V 0.2 ms
(LP MODE)
△V1 1.7 Vp-p
1 V 0.2 ms
CYL VM
CYL SW
TRIANGLE WAVE
CAP SW
CAP VM
TO/FROM POWER SUPPLY BLOCK DIAGRAM
B2
9
CAP FG
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)

]

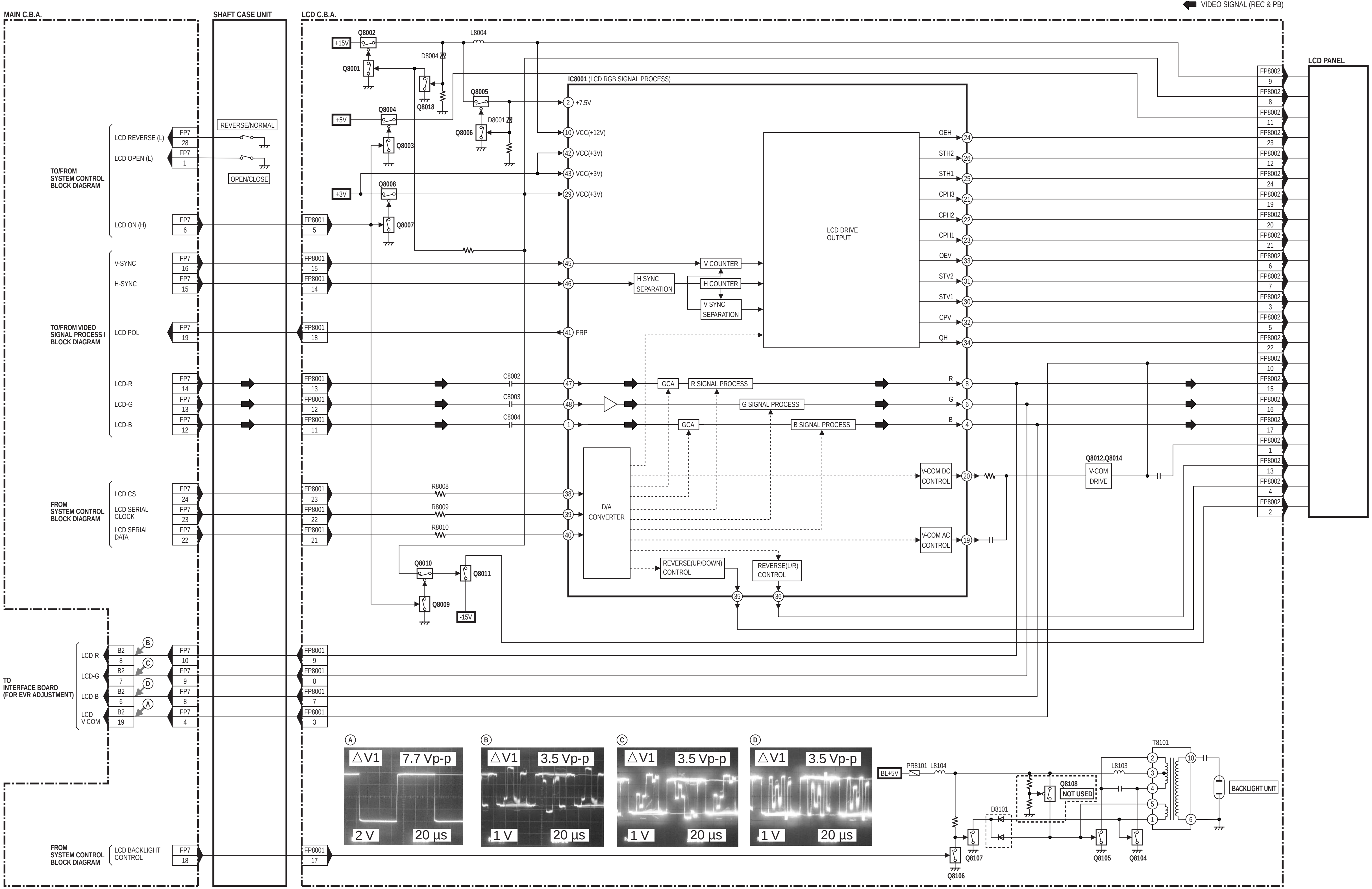
AF BLOCK DIAGRAM (Models: NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)


MAIN C.B.A.
IC6001
(SYSTEM MICROCONTROLLER)
ZOOM ENCODER 202
FOCUS ENCODER 203
LED CONTROL 181
ZOOM SW DATA 251
LENS DRIVE VD 24
LENS DRIVE CS 183
LENS DRIVE DATA 182
LENS DRIVE CLOCK 184
LENS DRIVE OSC 171
RESET(L) 22
+5V
Q6009
LED DRIVE
V-REF(H)
FP701 3
FP701 1,14
FP701 15
FP701 16
FP701 2
FP9 2
FP9 3
FP9 1
SIDE CASE L UNIT
ZOOM SW
LENS UNIT
FOCUS ENCODER
ZOOM ENCODER
CCD
HALL ELEMENT
IRIS MOTOR
FOCUS MOTOR (STEPPING MOTOR)
ZOOM MOTOR (STEPPING MOTOR)
IC701 (FOCUS/ZOOM MOTOR DRIVE / IRIS/HALL AMP CONTROL)
12
13
14
15
11
10
SERIAL
PARARELL DECODER
PULSE GENE.
LOGIC CONTROL
LOGIC CONTROL
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
1/N
OSC
RESET(L)
24
18
22
20
36
30
34
32
FP701 13
FP701 10
FP701 12
FP701 11
FP701 19
FP701 20
FP701 18
FP701 17
FP701 7
FP701 9
FP701 4
FP701 5
FP701 8
FP701 6
42
40
3
4
55
56
52
50
38
46
43
44
41
5
2
1
39
37
IRIS DRIVE
IRIS LOGIC
DRIVE
V-REF
ALC PWM CONTROL
STILL CONTROL
TO VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
212 HALL BIAS CONTROL
254 F NUMBER
213 PWM BIAS CONTROL
27 IRIS OPEN
211 HALL AMP GAIN CONTROL

AF BLOCK DIAGRAM (Models: NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)


MAIN C.B.A.
IC6001
(SYSTEM MICROCONTROLLER)
ZOOM ENCODER 257
FOCUS ENCODER 258
LED CONTROL 17
ZOOM SW DATA 244
LENS DRIVE VD 174
LENS DRIVE CS 183
LENS DRIVE DATA 182
LENS DRIVE CLOCK 184
LENS DRIVE OSC 175
RESET(L) 181
+5V
Q6005
LED DRIVE
V-REF(H)
FP701 3
FP701 1,14
FP701 15
FP701 16
FP701 2
FP9 2
FP9 3
FP9 1
SIDE CASE L UNIT
ZOOM SW
LENS UNIT
FOCUS ENCODER
ZOOM ENCODER
CCD
HALL ELEMENT
IRIS MOTOR
FOCUS MOTOR (STEPPING MOTOR)
ZOOM MOTOR (STEPPING MOTOR)
IC701 (FOCUS/ZOOM MOTOR DRIVE / IRIS/HALL AMP CONTROL)
12
13
14
15
11
10 RESET(L)
SERIAL PARARELL DECODER
PULSE GENE.
LOGIC CONTROL
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
1/N
OSC
24 FP701 13
18 FP701 10
22 FP701 12
20 FP701 11
36 FP701 19
30 FP701 20
34 FP701 18
32 FP701 17
FP701 7
FP701 9
FP701 4
FP701 5
FP701 8
FP701 6
ALC PWM CONTROL
STILL CONTROL
TO VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
212 HALL BIAS CONTROL
247 F NUMBER
165 PWM BIAS CONTROL
126 IRIS OPEN
211 HALL AMP GAIN CONTROL
42
40
41
3
4
5
55
56
52
50
2
1
38
39
37
46
43
44
IRIS DRIVE
IRIS LOGIC
DRIVE
V-REF

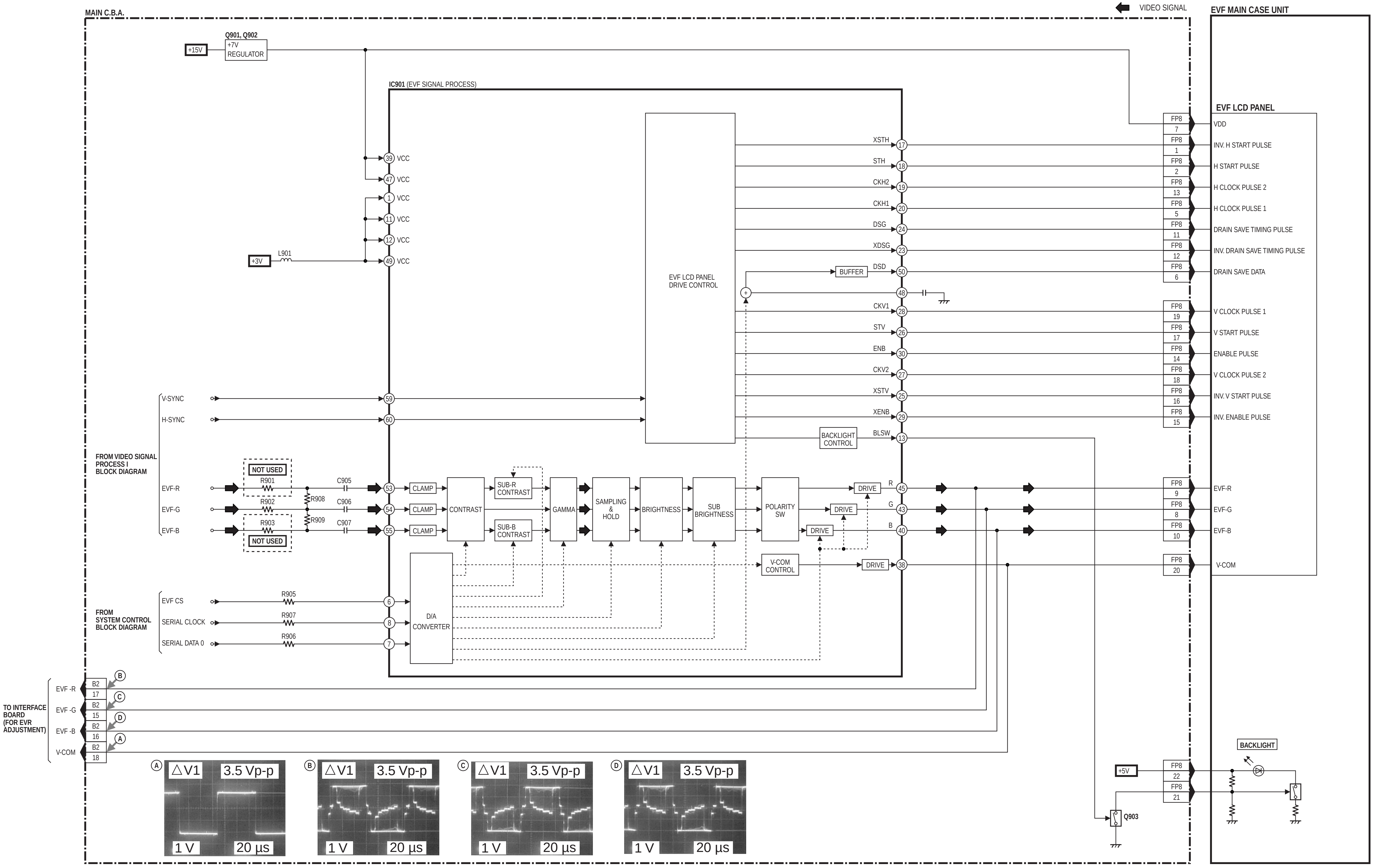
LCD BLOCK DIAGRAM



VIDEO SIGNAL (REC & PB)
MAIN C.B.A.
SHAFT CASE UNIT
LCD C.B.A.
LCD PANEL
TO/FROM SYSTEM CONTROL BLOCK DIAGRAM
LCD REVERSE (L)
LCD OPEN (L)
LCD ON (H)
FP7
REVERSE/NORMAL
OPEN/CLOSE
TO/FROM VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
V-SYNC
H-SYNC
LCD POL
LCD-R
LCD-G
LCD-B
FROM SYSTEM CONTROL BLOCK DIAGRAM
LCD CS
LCD SERIAL CLOCK
LCD SERIAL DATA
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
LCD-V-COM
B2
FROM SYSTEM CONTROL BLOCK DIAGRAM
LCD BACKLIGHT CONTROL
FP8001
+15V
+5V
+3V
-15V
BL+5V
Q8001
Q8002
Q8003
Q8004
Q8005
Q8006
Q8007
Q8008
Q8009
Q8010
Q8011
Q8018
D8001
D8004
L8004
C8002
C8003
C8004
R8008
R8009
R8010
IC8001 (LCD RGB SIGNAL PROCESS)
+7.5V
VCC(+12V)
VCC(+3V)
FRP
H SYNC SEPARATION
V COUNTER
H COUNTER
V SYNC SEPARATION
LCD DRIVE OUTPUT
OEH
STH2
STH1
CPH3
CPH2
CPH1
OEV
STV2
STV1
CPV
QH
GCA
R SIGNAL PROCESS
G SIGNAL PROCESS
B SIGNAL PROCESS
R
G
B
D/A CONVERTER
V-COM DC CONTROL
V-COM AC CONTROL
REVERSE(UP/DOWN) CONTROL
REVERSE(L/R) CONTROL
Q8012,Q8014
V-COM DRIVE
FP8002
Ⓐ △V1 7.7 Vp-p 2 V 20 µs
Ⓑ △V1 3.5 Vp-p 1 V 20 µs
Ⓒ △V1 3.5 Vp-p 1 V 20 µs
Ⓓ △V1 3.5 Vp-p 1 V 20 µs
PR8101
L8104
L8103
T8101
D8101
Q8108
NOT USED
Q8104
Q8105
Q8106
Q8107
BACKLIGHT UNIT

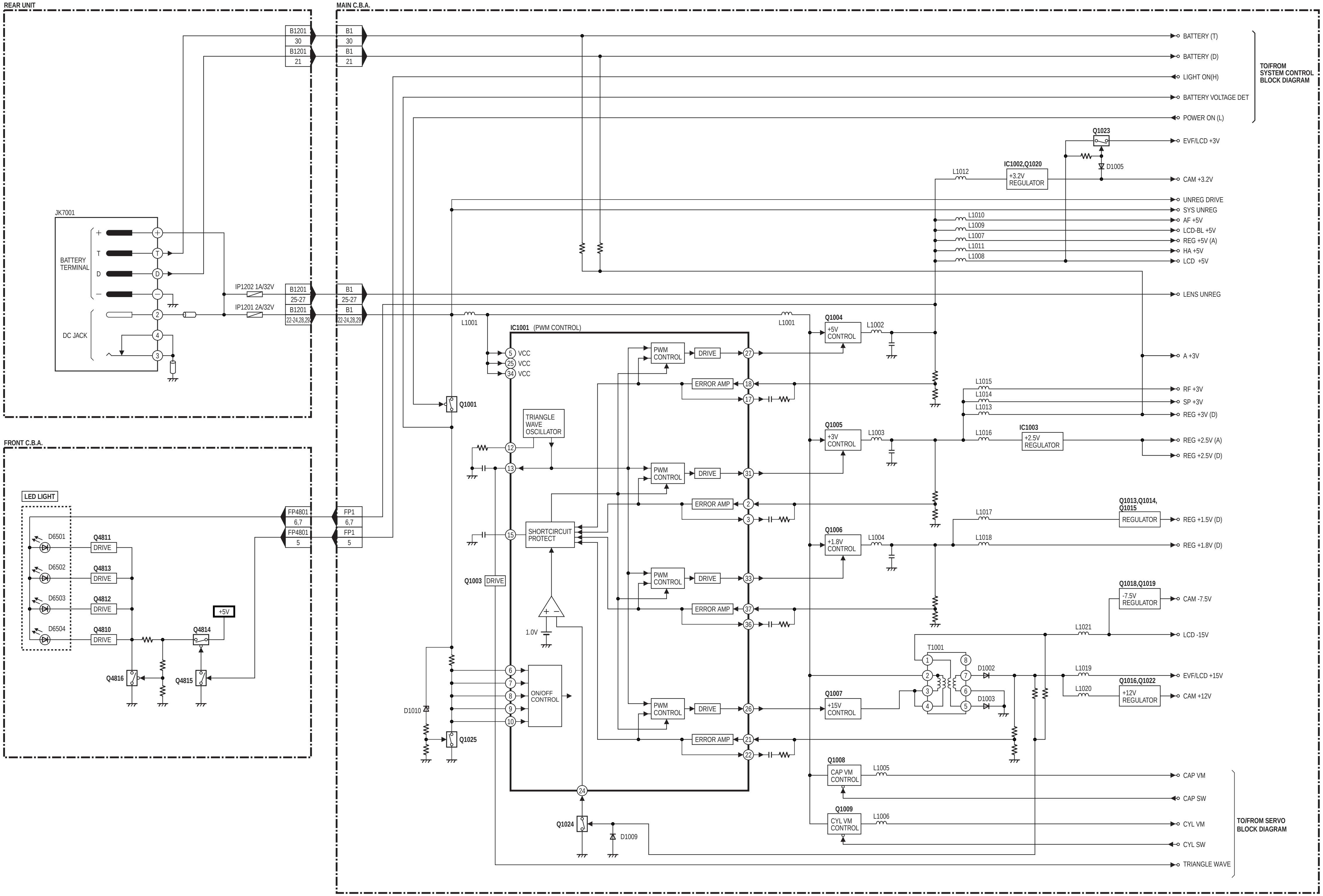
LCD BLOCK DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

EVF BLOCK DIAGRAM

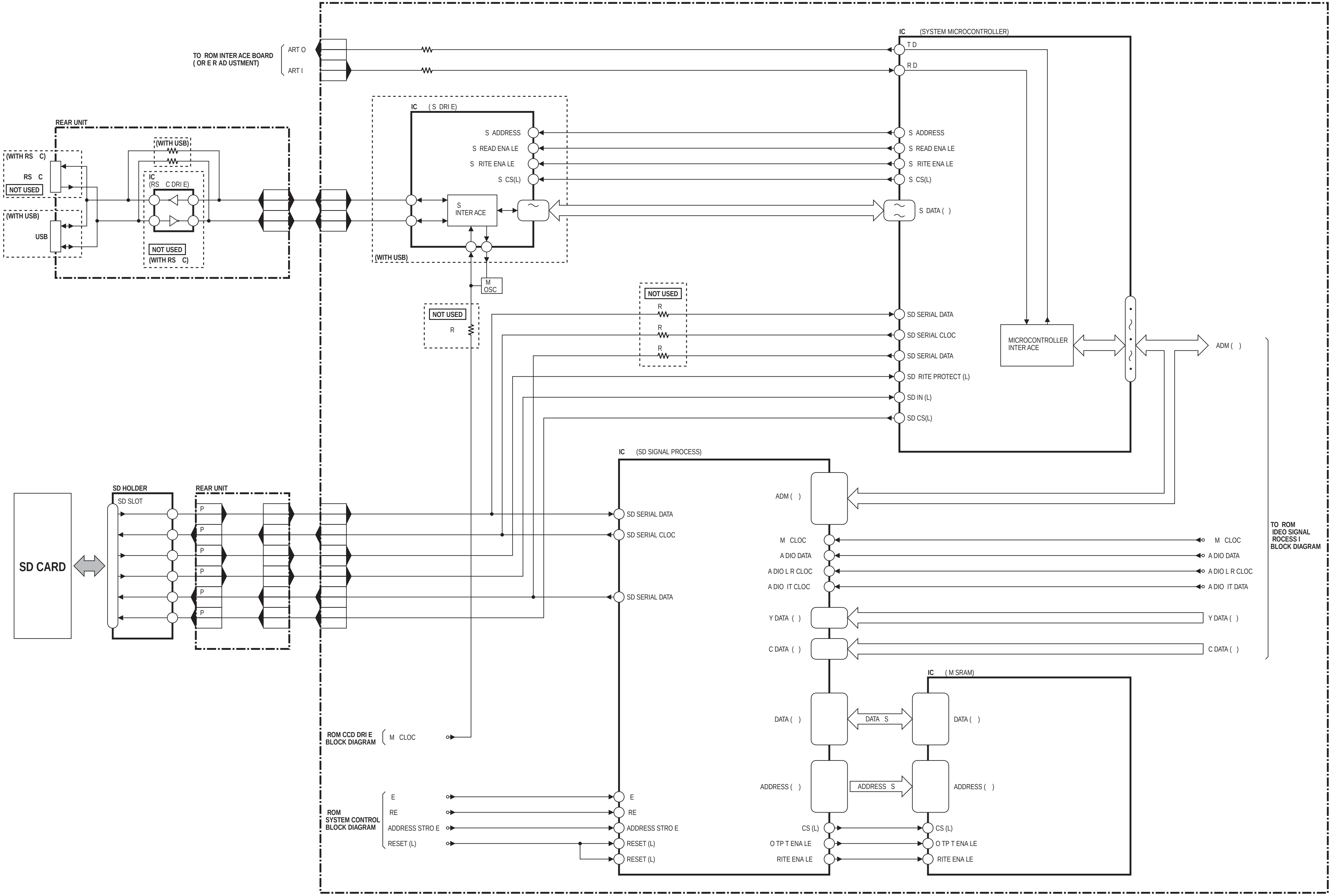


MAIN C.B.A.
VIDEO SIGNAL
EVF MAIN CASE UNIT
+15V
Q901, Q902
+7V REGULATOR
IC901 (EVF SIGNAL PROCESS)
39 VCC
47 VCC
1 VCC
11 VCC
12 VCC
49 VCC
+3V
L901
EVF LCD PANEL DRIVE CONTROL
XSTH 17
STH 18
CKH2 19
CKH1 20
DSG 24
XDSG 23
BUFFER
DSD 50
48
CKV1 28
STV 26
ENB 30
CKV2 27
XSTV 25
XENB 29
BACKLIGHT CONTROL
BLSW 13
EVF LCD PANEL
FP8 7 VDD
FP8 1 INV. H START PULSE
FP8 2 H START PULSE
FP8 13 H CLOCK PULSE 2
FP8 5 H CLOCK PULSE 1
FP8 11 DRAIN SAVE TIMING PULSE
FP8 12 INV. DRAIN SAVE TIMING PULSE
FP8 6 DRAIN SAVE DATA
FP8 19 V CLOCK PULSE 1
FP8 17 V START PULSE
FP8 14 ENABLE PULSE
FP8 18 V CLOCK PULSE 2
FP8 16 INV. V START PULSE
FP8 15 INV. ENABLE PULSE
FP8 9 EVF-R
FP8 8 EVF-G
FP8 10 EVF-B
FP8 20 V-COM
V-SYNC 59
H-SYNC 60
FROM VIDEO SIGNAL PROCESS I BLOCK DIAGRAM
EVF-R
EVF-G
EVF-B
NOT USED
R901
R902
R903
NOT USED
R908
R909
C905
C906
C907
53
54
55
CLAMP
CLAMP
CLAMP
CONTRAST
SUB-R CONTRAST
SUB-B CONTRAST
GAMMA
SAMPLING & HOLD
BRIGHTNESS
SUB BRIGHTNESS
POLARITY SW
DRIVE
DRIVE
DRIVE
R 45
G 43
B 40
V-COM CONTROL
DRIVE
38
D/A CONVERTER
FROM SYSTEM CONTROL BLOCK DIAGRAM
EVF CS
R905
6
SERIAL CLOCK
R907
8
SERIAL DATA 0
R906
7
TO INTERFACE BOARD (FOR EVR ADJUSTMENT)
EVF -R B2 17 B
EVF -G B2 15 C
EVF -B B2 16 D
V-COM B2 18 A
BACKLIGHT
+5V
FP8 22
FP8 21
Q903
A △V1 3.5 Vp-p 1 V 20 µs
B △V1 3.5 Vp-p 1 V 20 µs
C △V1 3.5 Vp-p 1 V 20 µs
D △V1 3.5 Vp-p 1 V 20 µs

POWER SUPPLY BLOCK DIAGRAM


REAR UNIT
MAIN C.B.A.
FRONT C.B.A.
B1201
30
21
B1
25-27
22-24,28,29
JK7001
BATTERY TERMINAL
DC JACK
IP1202 1A/32V
IP1201 2A/32V
LED LIGHT
D6501
D6502
D6503
D6504
Q4811
Q4813
Q4812
Q4810
DRIVE
Q4814
Q4816
Q4815
+5V
FP4801
6,7
5
FP1
L1001
IC1001 (PWM CONTROL)
VCC
TRIANGLE WAVE OSCILLATOR
SHORTCIRCUIT PROTECT
PWM CONTROL
ERROR AMP
ON/OFF CONTROL
1.0V
Q1001
Q1003
Q1024
Q1025
D1009
D1010
Q1004
+5V CONTROL
Q1005
+3V CONTROL
Q1006
+1.8V CONTROL
Q1007
+15V CONTROL
Q1008
CAP VM CONTROL
Q1009
CYL VM CONTROL
L1002
L1003
L1004
L1005
L1006
L1007
L1008
L1009
L1010
L1011
L1012
L1013
L1014
L1015
L1016
L1017
L1018
L1019
L1020
L1021
T1001
D1002
D1003
D1005
Q1023
IC1002,Q1020
+3.2V REGULATOR
IC1003
+2.5V REGULATOR
Q1013,Q1014, Q1015
REGULATOR
Q1018,Q1019
-7.5V REGULATOR
Q1016,Q1022
+12V REGULATOR
BATTERY (T)
BATTERY (D)
LIGHT ON(H)
BATTERY VOLTAGE DET
POWER ON (L)
TO/FROM SYSTEM CONTROL BLOCK DIAGRAM
EVF/LCD +3V
CAM +3.2V
UNREG DRIVE
SYS UNREG
AF +5V
LCD-BL +5V
REG +5V (A)
HA +5V
LCD +5V
LENS UNREG
A +3V
RF +3V
SP +3V
REG +3V (D)
REG +2.5V (A)
REG +2.5V (D)
REG +1.5V (D)
REG +1.8V (D)
CAM -7.5V
LCD -15V
EVF/LCD +15V
CAM +12V
CAP VM
CAP SW
CYL VM
CYL SW
TRIANGLE WAVE
TO/FROM SERVO BLOCK DIAGRAM

SD BLOCK DIAGRAM (Models: NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S)


TO ROM INTER ACE BOARD
(OR E R AD USTMENT)
ART O
ART I
IC (SYSTEM MICROCONTROLLER)
T D
R D
IC (S DRI E)
S ADDRESS
S READ ENA LE
S RITE ENA LE
S CS(L)
S INTER ACE
S DATA ( )
(WITH USB)
M OSC
REAR UNIT
(WITH RS C)
RS C
NOT USED
(WITH USB)
USB
(WITH USB)
IC
(RS C DRI E)
NOT USED
(WITH RS C)
NOT USED
R
NOT USED
R
R
R
SD SERIAL DATA
SD SERIAL CLOC
SD SERIAL DATA
SD RITE PROTECT (L)
SD IN (L)
SD CS(L)
MICROCONTROLLER INTER ACE
ADM ( )
IC (SD SIGNAL PROCESS)
SD HOLDER
SD SLOT
REAR UNIT
P
P
P
P
P
P
SD CARD
SD SERIAL DATA
SD SERIAL CLOC
SD SERIAL DATA
ADM ( )
M CLOC
A DIO DATA
A DIO L R CLOC
A DIO IT CLOC
Y DATA ( )
C DATA ( )
M CLOC
A DIO DATA
A DIO L R CLOC
A DIO IT DATA
Y DATA ( )
C DATA ( )
TO ROM IDEO SIGNAL ROCESS I BLOCK DIAGRAM
IC (M SRAM)
DATA ( )
DATA S
DATA ( )
ADDRESS ( )
ADDRESS S
ADDRESS ( )
ROM CCD DRI E BLOCK DIAGRAM
M CLOC
ROM SYSTEM CONTROL BLOCK DIAGRAM
E
RE
ADDRESS STRO E
RESET (L)
E
RE
ADDRESS STRO E
RESET (L)
RESET (L)
CS (L)
O TP T ENA LE
RITE ENA LE
CS (L)
O TP T ENA LE
RITE ENA LE

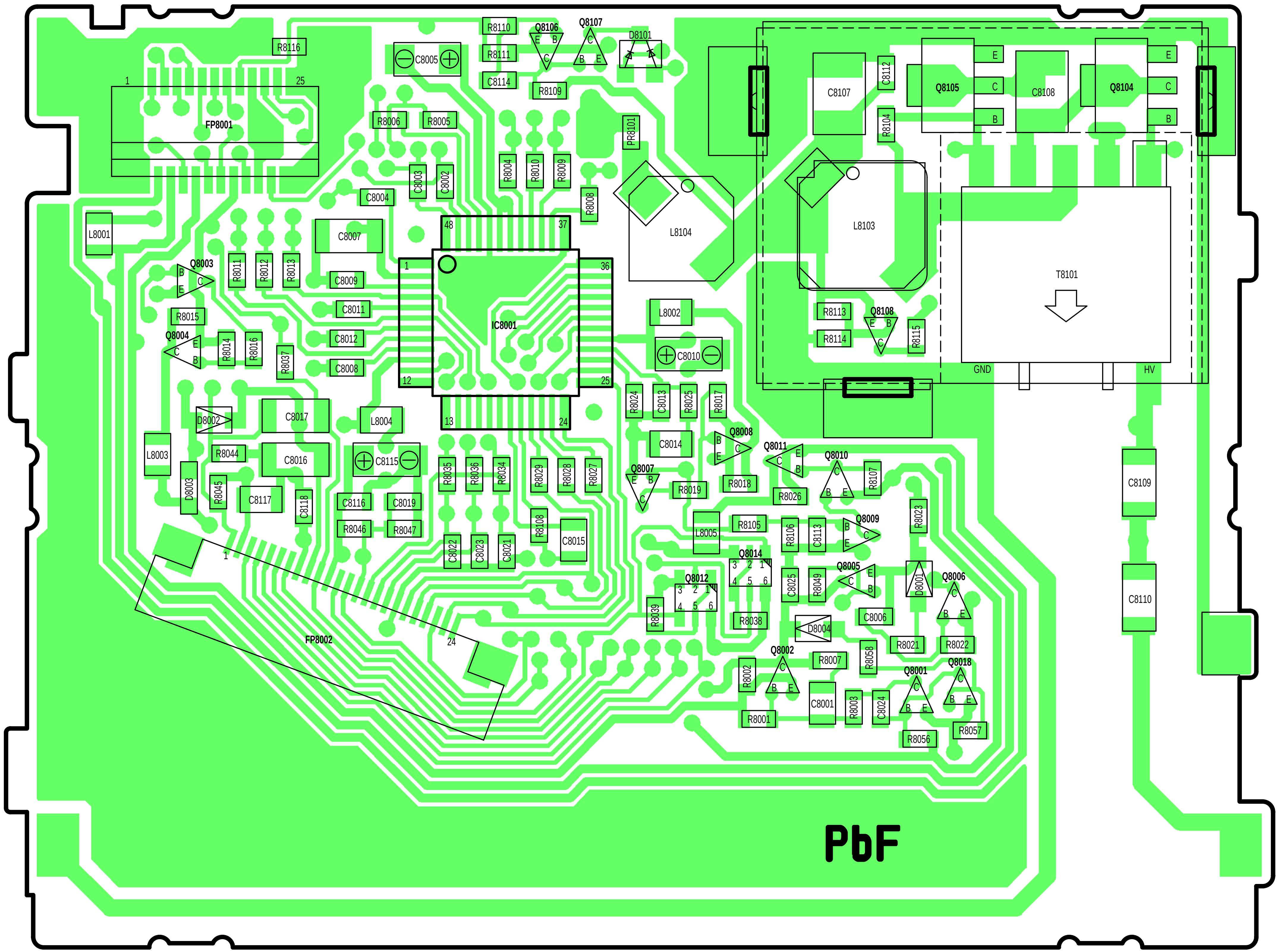
LCD C.B.A. LSEP8218B1

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

(FOIL SIDE)


R8116
FP8001
1
25
C8005
R8110
R8111
C8114
Q8106
E B C
Q8107
C B E
D8101
R8109
R8006
R8005
C8003
C8002
R8004
R8010
R8009
PR8101
R8008
C8004
C8007
L8001
Q8003
B C E
R8011
R8012
R8013
C8009
C8011
C8012
C8008
R8015
Q8004
E C B
R8014
R8016
R8037
48
37
1
36
12
25
13
24
IC8001
L8104
L8103
C8107
C8112
Q8105
E C B
C8108
Q8104
E C B
R8104
T8101
GND
HV
L8002
C8010
R8113
R8114
Q8108
E B C
R8115
D8002
C8017
L8004
L8003
R8044
C8016
C8115
D8003
R8045
C8117
C8118
C8116
C8019
R8046
R8047
R8035
R8036
R8034
R8029
R8028
R8027
R8108
C8015
C8022
C8023
C8021
R8024
C8013
R8025
R8017
C8014
Q8008
B C E
Q8007
E B C
R8019
R8018
Q8011
C E B
Q8010
C B E
R8107
R8026
L8005
R8105
R8106
C8113
Q8009
B C E
R8023
Q8014
3 2 1
4 5 6
Q8012
3 2 1
4 5 6
R8039
R8038
C8025
R8049
Q8005
C E B
D8001
Q8006
C B E
C8006
D8004
C8109
C8110
R8021
R8022
Q8002
C B E
R8007
R8058
Q8001
C B E
Q8018
C B E
R8002
R8001
C8001
R8003
C8024
R8056
R8057
FP8002
1
24
PbF

(DUAL PATTERNS)

LSJB8218

LCD C.B.A. LSEP8218B1
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

MAIN PARTS PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	⑮	Bottom Case	❶	5(402), 2(515)	1
2	⑯	Cassette Cover Unit	❶	2(L-1)	2
3	⑭	Top Piece	❶	(516), 2(L-2)	3
4	-	Front Case Ass’y	❶	(402), (405), 2(L-3), FP1	4
5	-	Side Case R & LCD Ass’y	❶	(405), (410), (528), P1, FP7, FP11, FP12	5
6	-	Lens Ass’y	❶	(402), (416), FP301, FP701	6
7	-	EVF Ass’y	❶	(403), FP8	7
	⑬	Rear Unit		(515), B1	
8	⑫	Tripod	❶	3(403)	-
9	(E10)	Main C.B.A.	❶	(402), (L-4), FP2, FP3, FP4, FP5, FP9	8
10	①	Mechanism Chassis Ass’y	❶	3(413)	9
11	⑪	Side Case L Unit	❶	-----	-

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

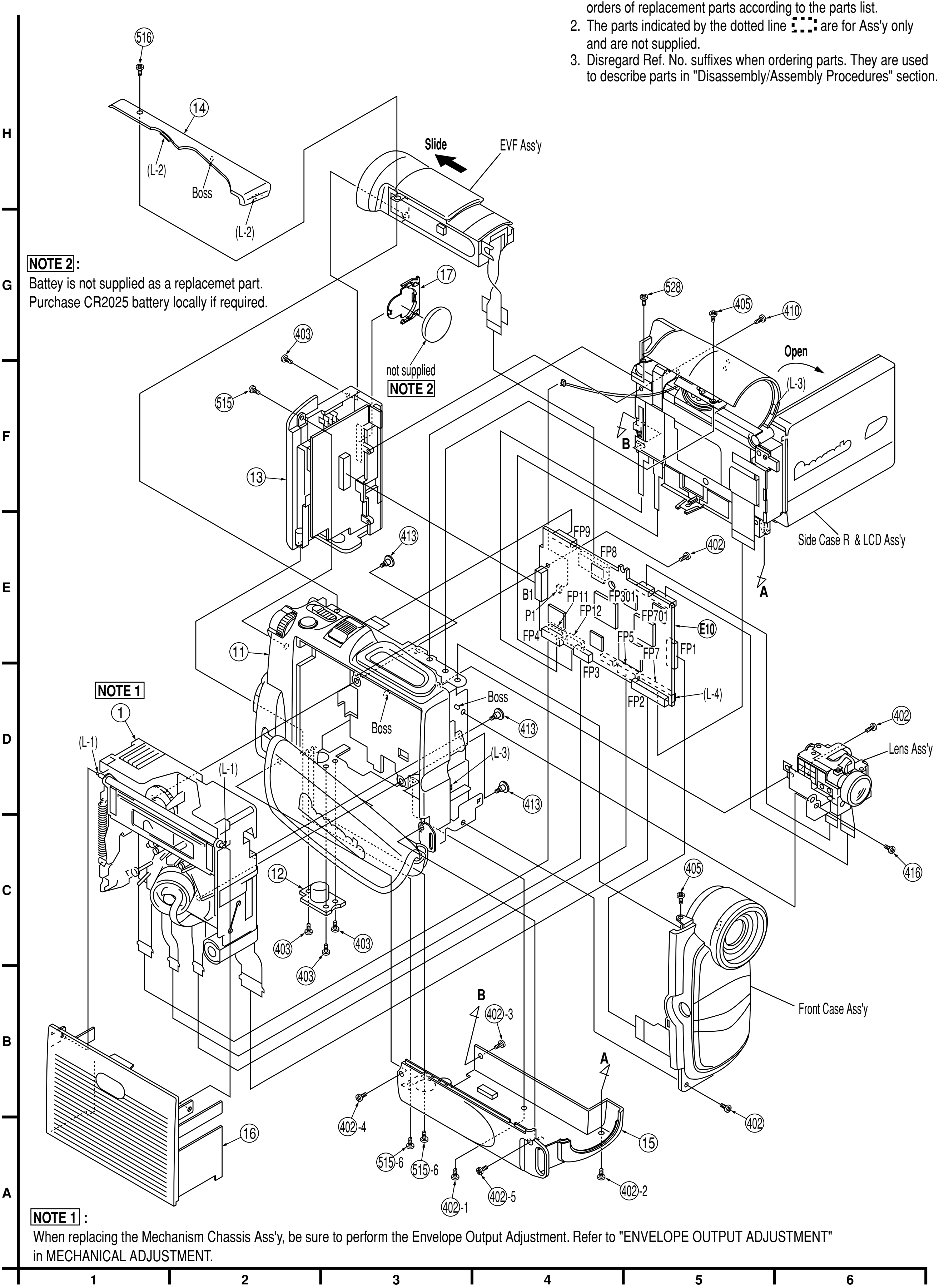
How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
B: Ref No.
C: Part to be removed or installed.
D: Section No.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
F: Refer to "Notes in chart."

❶ MAIN PARTS SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⁝⁝ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.



H
G
F
E
D
C
B
A
1
2
3
4
5
6
516
14
(L-2)
Boss
(L-2)
Slide
EVF Ass'y
17
not supplied
NOTE 2
528
405
410
Open
(L-3)
403
515
13
B
Side Case R & LCD Ass'y
A
FP9
FP8
402
413
B1
P1
FP11
FP12
FP301
FP701
E10
FP4
FP5
FP7
FP1
FP3
FP2
(L-4)
11
Boss
413
NOTE 1
1
(L-1)
(L-1)
Boss
(L-3)
413
402
Lens Ass'y
416
12
405
403
403
403
B
402-3
A
Front Case Ass'y
16
402-4
15
402
515-6
515-6
402-1
402-5
402-2

NOTE 2 :
Battey is not supplied as a replacemet part.
Purchase CR2025 battery locally if required.

NOTE 1 :
When replacing the Mechanism Chassis Ass'y, be sure to perform the Envelope Output Adjustment. Refer to "ENVELOPE OUTPUT ADJUSTMENT" in MECHANICAL ADJUSTMENT.

FRONT CASE PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
3	(E20)	Front C.B.A.	❷	3(402)	-
6	㊶	Front Unit	❷	-----	-

↑ ↑ ↑ ↑ ↑ ↑

A B C D E F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.

B: Ref No.

C: Part to be removed or installed.

D: Section No.

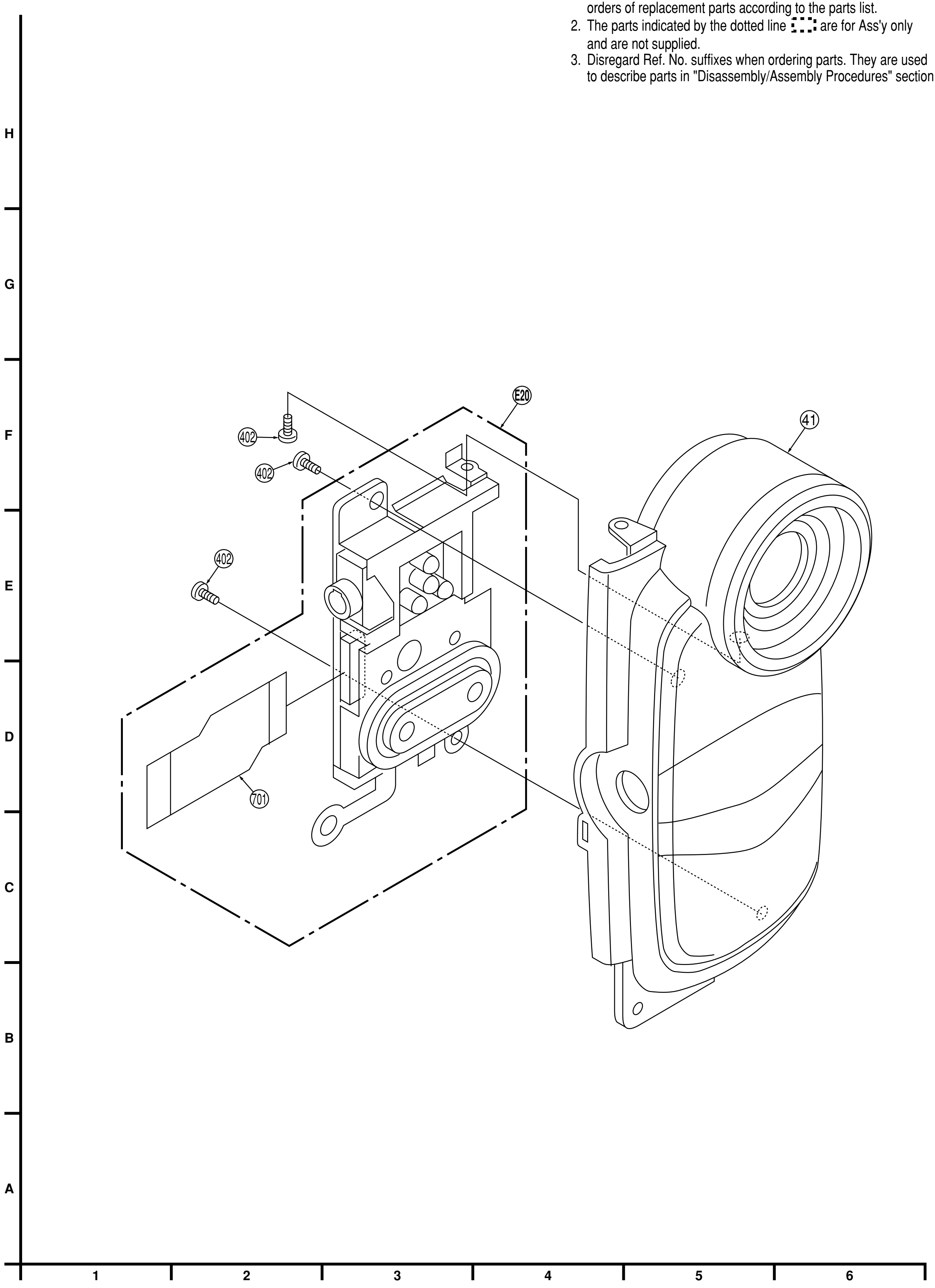
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)

F: Refer to "Notes in chart."

❷ FRONT CASE SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⬚ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.



CCD PORTION & LENS PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	(E40)	CCD C.B.A.	❸	2(526)	10
2	(66)	Filter Rubber	❸	-----	10
3	(63)	Optical Filter	❸	-----	10

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
B: Ref No.
C: Part to be removed or installed.
D: Section No.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
F: Refer to "Notes in chart."

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	(69)	Focus Motor Unit	❸	3(525), Unsolder	11
2	(68)	Zoom Motor Unit	❸	2(525), Unsolder	11

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
B: Ref No.
C: Part to be removed or installed.
D: Section No.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
F: Refer to "Notes in chart."

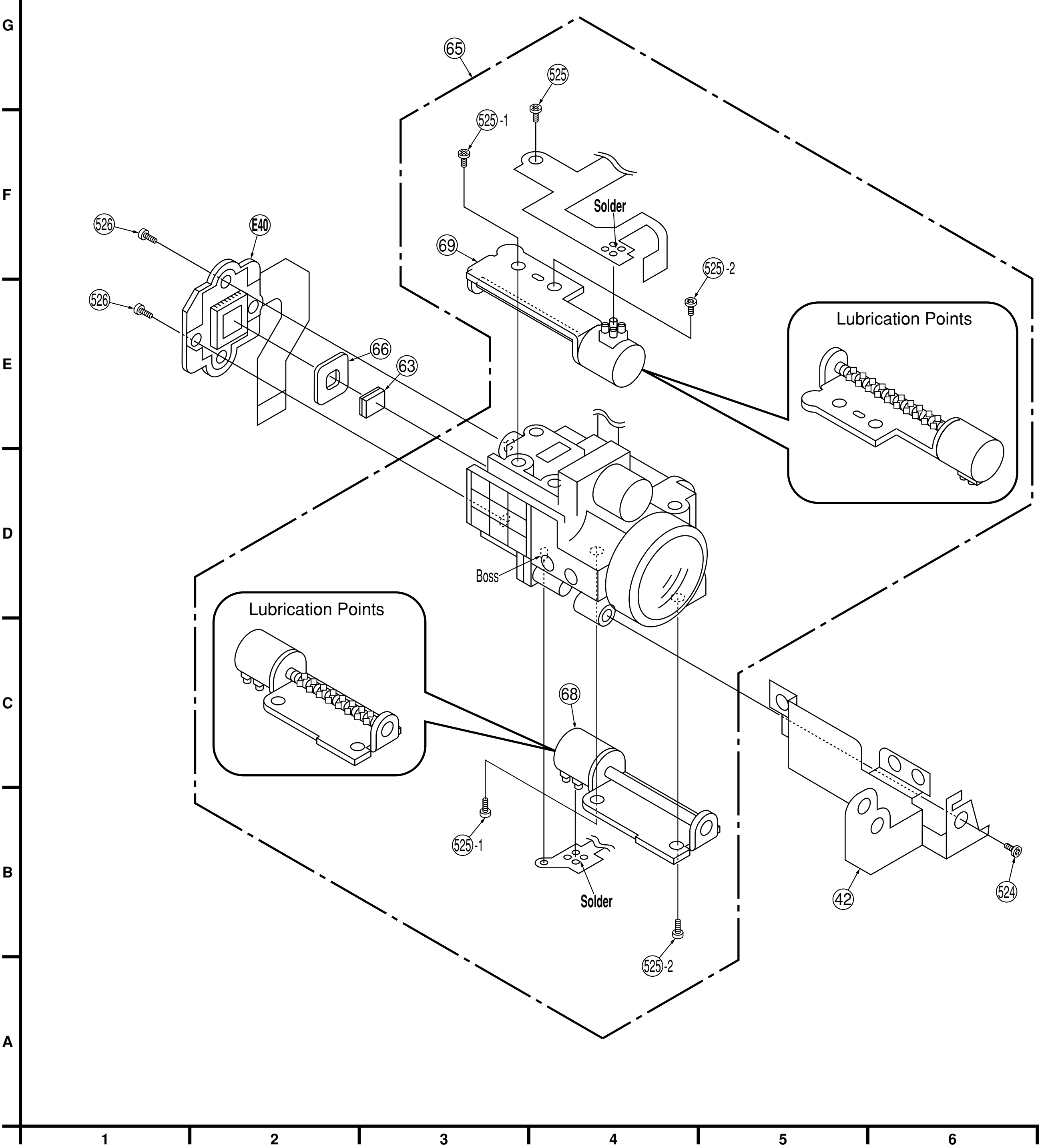
❸ CCD AND LENS SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⁞⁞ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
□□□	Grease	Available from Factroy	LSZG0030


H
G
F
E
D
C
B
A
1
2
3
4
5
6
65
525
525-1
Solder
69
525-2
526
E40
526
66
63
Lubrication Points
Boss
Lubrication Points
68
525-1
Solder
525-2
42
524

EVF PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	㉛	EVF Main Case Unit	❹	(523), (L-1), FP951	12
2	㉞	Eye Cap	❹	-----	12
↑ A	↑ B	↑ C	↑ D	↑ E	↑ F

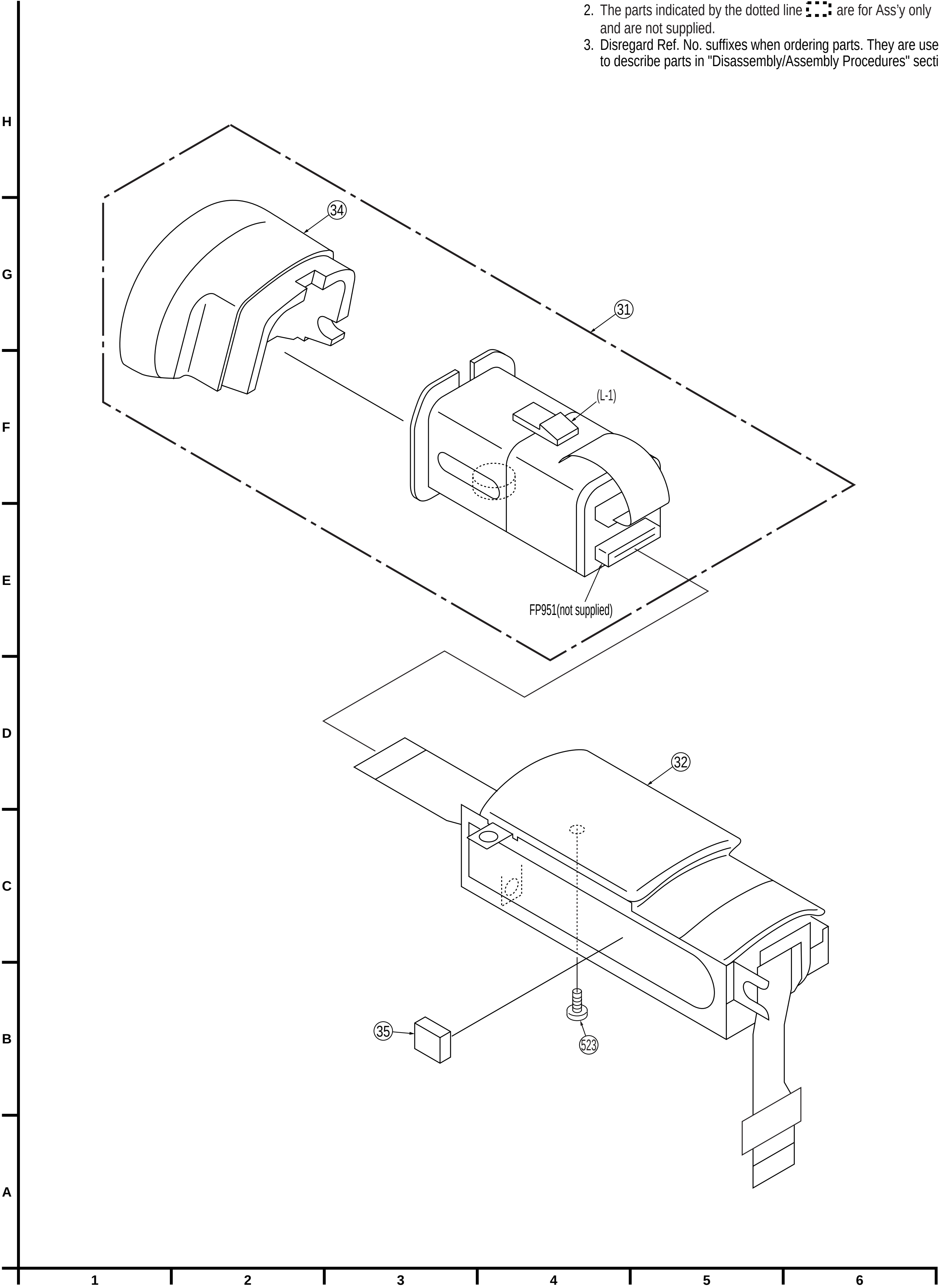
How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
B: Ref No.
C: Part to be removed or installed.
D: Section No.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
F: Refer to "Notes in chart."

❹ EVF SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⁞⁚⁞ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.


H
G
F
E
D
C
B
A
1
2
3
4
5
6
㉞
㉛
(L-1)
FP951(not supplied)
㉜
㉟
523

SIDE CASE R & LCD PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	(94)	LCD Cace A Unit	❺	2(449), 2(527), 6(L-1)	-
2	㉑	Side Case R Unit	❺	FP8001	-
3	(96)	Shaft Case Unit	❺	3(404), (405), (L-2), R ESD Angle, ㉓	13

A B C D E F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
B: Ref No.
C: Part to be removed or installed.
D: Section No.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
F: Refer to "Notes in chart."

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	(95)	LCD Case B	❺	4(L-3)	-
2	(E30)	LCD C.B.A.	❺	3(L-4), FP8002, Unsolder	14
3	(98)	LCD Panel	❺	(88), (89)	14
4	(99)	Lead Light Panel Unit	❺	-----	14
5	(100)	Back Light Unit	❺	2(L-5), 2(L-6) LCD Diffusion Sheet, Lead Light Panel	15

A B C D E F

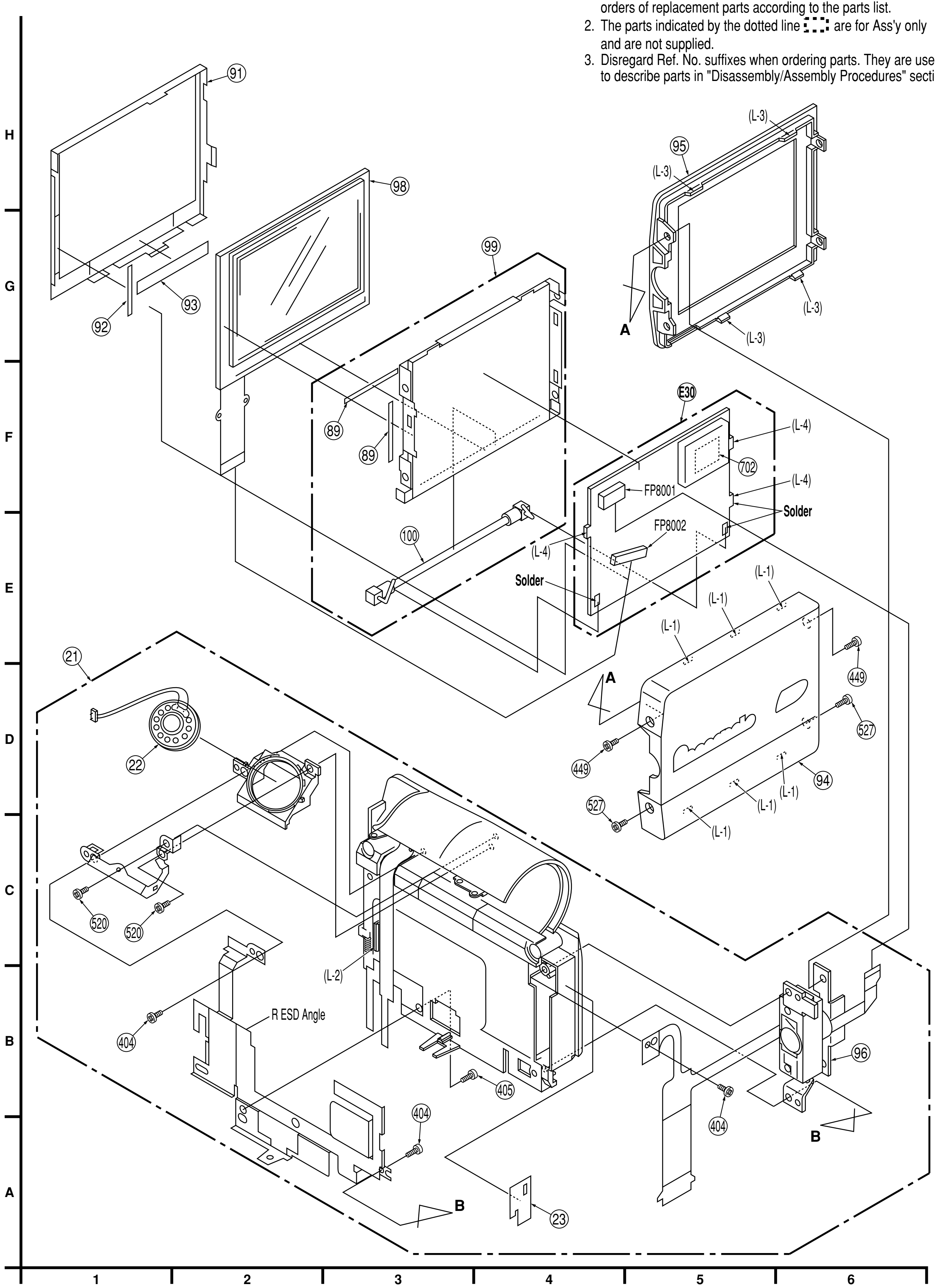
How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
B: Ref No.
C: Part to be removed or installed.
D: Section No.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404) = 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
F: Refer to "Notes in chart."

❺ SIDE CASE R AND LCD SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line ⬚ are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.


91
98
93
92
99
95
(L-3)
(L-3)
(L-3)
(L-3)
A
89
89
E30
(L-4)
702
FP8001
(L-4)
Solder
FP8002
100
(L-4)
Solder
(L-1)
(L-1)
(L-1)
449
A
527
21
449
94
22
527
(L-1)
(L-1)
(L-1)
520
520
(L-2)
R ESD Angle
404
405
96
404
404
B
B
23
H
G
F
E
D
C
B
A
1
2
3
4
5
6

Notes in chart

1. **Removal of Bottom Case**
   1) Release the Hand Strap, and Open the LCD. Then remove the Bottom Case.

   Installation of Bottom Case
   1) Open the LCD.
   2) Set the Bottom Case and tighten 7 Screws (402, 515) in order while pushing the Bottom Case as indicated by the arrow.

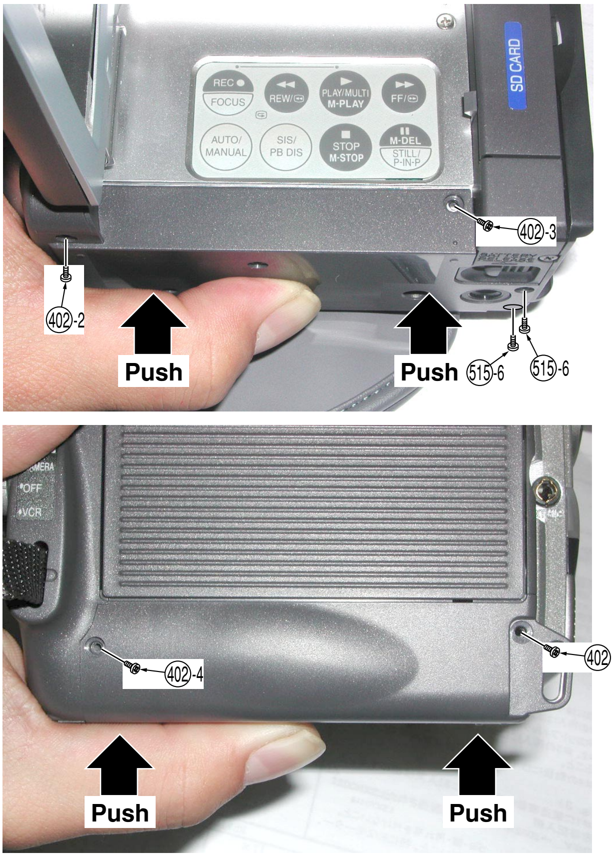

402-3
402-2
Push
Push
515-6
515-6
402-4
402-5
Push
Push

Fig. D2

2. **Removal of Cassette Cover Unit**
   CAUTION:
   Be careful not to apply any pressure to the Garage Unit of the Mechanism Chassis Ass'y.
   1) Slide the EJECT Switch with the power supply on.
      Note:
      If it doesn't eject manually. Refer to "METHOD FOR EJECTING WITH POWER OFF."
   2) Pinch and pull the Cassette Cover Unit to release the Locking Tab (L-1) while holding the Garage Unit carefully as shown. Then release the other Locking Tab (L-1).
      CAUTION:
      Take care not to break the Cassette Cover.

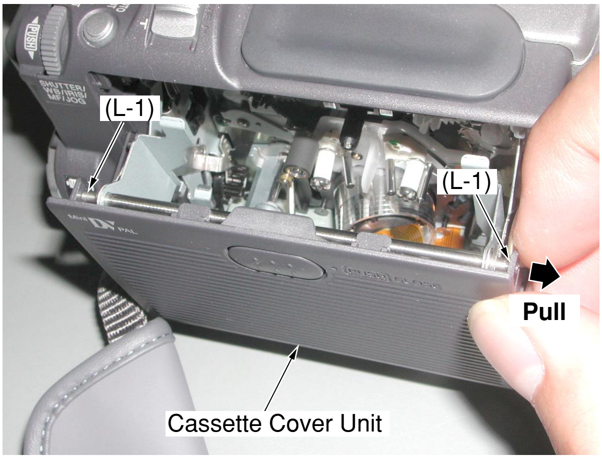

(L-1)
(L-1)
Pull
Cassette Cover Unit

Fig. D3-1

Installation of Cassette Cover Unit
CAUTION:
Be careful not to apply any pressure to the Garage Unit of the Mechanism Chassis Ass'y.
1) Insert lower portions of the Cassette Cover Unit into slots of the Side Case L Unit.

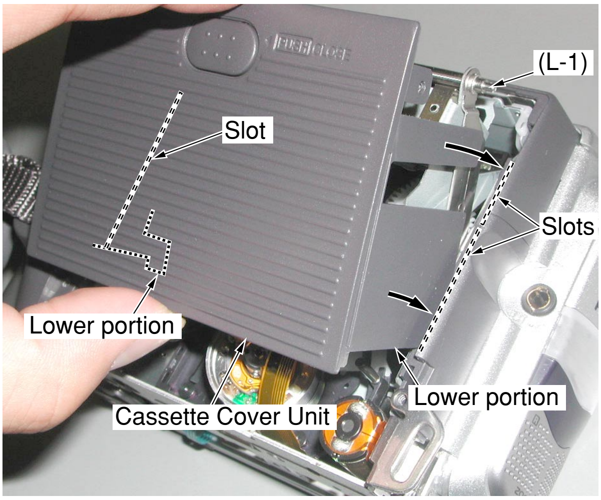
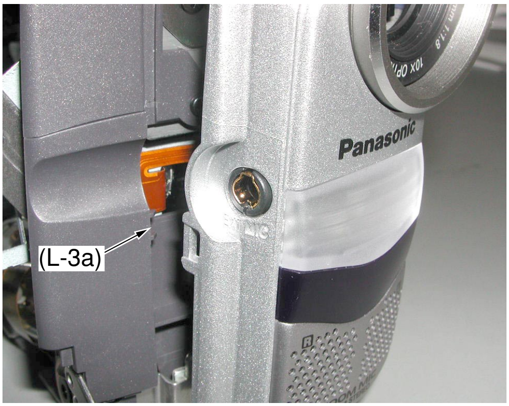

(L-1)
Slot
Slots
Lower portion
Lower portion
Cassette Cover Unit

Fig. D3-2

2) Set the 2 Locking Tabs (L-1) while holding the Garage Unit carefully.
   CAUTION:
   Take care not to break the Cassette Cover.

3. **Removal/Installation of Top Piece**
   Take care not to break the Locking Tab (L-2) on front side of the Top Piece.

4. **Removal of Front Case Ass'y**
   1) Remove the 2 Screws.
   2) Pull the Front Case Ass'y to release the Locking Tab (L-3a) as shown.
   3) Then, release the Locking Tab (L-3b) taking care not to damage the motor terminal of the Lens Ass'y.


(L-3a)
Panasonic

View A

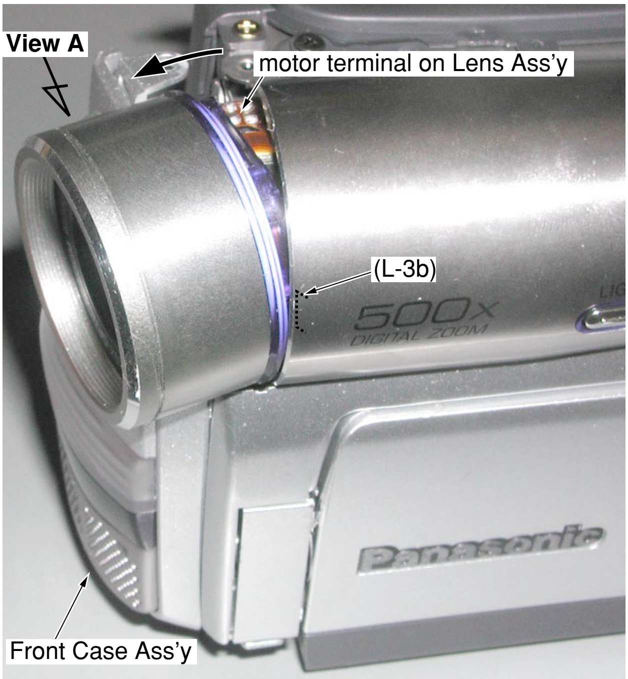

View A
motor terminal on Lens Ass'y
(L-3b)
500x
DIGITAL ZOOM
Panasonic
Front Case Ass'y

Fig. D4

Installation of Front Case Ass'y
Take care not to damage the motor terminal of the Lens Ass'y.

5. **Removal of Side Case R & LCD Ass'y**
   To disconnect the Connector P1, pinch the connector portion with tweezers. Do not pull the Speaker Leads as they may be damaged.

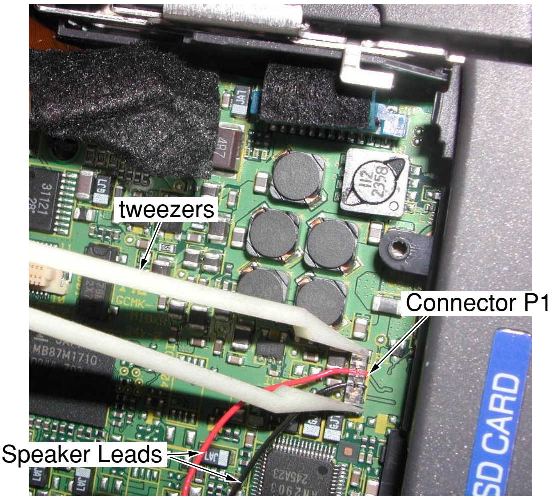

tweezers
Connector P1
Speaker Leads
SD CARD

Fig. D5-1

Installation of Side Case R & LCD Ass'y
After installing the Side Case R & LCD Ass'y, confirm that the holes are lined up and then tighten Screws.

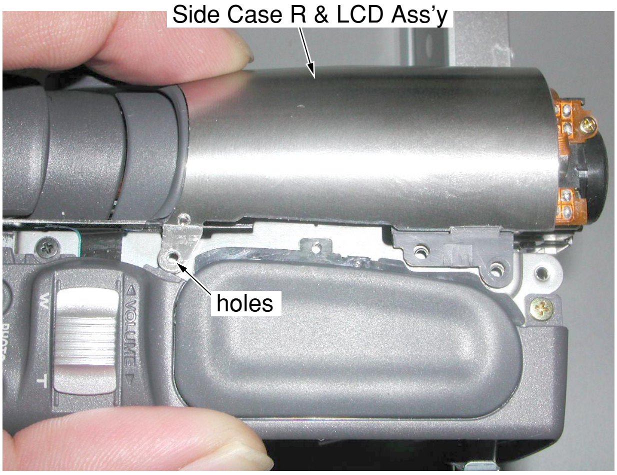

Side Case R & LCD Ass'y
holes
W
T
VOLUME

Fig. D5-2

6. **Installation of Lens Ass'y**

Take care not to damage the CCD F.P.C. and Lens F.P.C.

1) Tighten the Screw (416) while keeping the Lens Ass'y pressed in the direction indicated by the arrow.
2) Make sure that the CCD F.P.C. and the Lens F.P.C. are bent as shown.

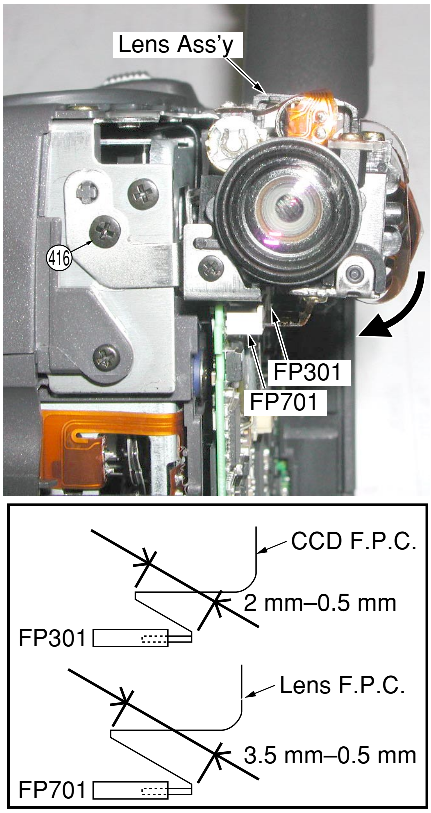

Lens Ass'y
416
FP301
FP701
CCD F.P.C.
2 mm–0.5 mm
FP301
Lens F.P.C.
3.5 mm–0.5 mm
FP701

Fig. D6

7. **Removal of EVF Ass'y and Rear Unit**

1) Remove both the EVF Ass'y and the Rear Unit by removing the Screw (515).

Installation of EVF Ass'y and Rear Unit

1) Set the EVF Ass'y into the Rear Unit and tighten the Screw (403).
2) Then, install both the EVF Ass'y and the Rear Unit into the Side Case L Unit. (Make sure that Connector B1 is connected firmly.)

8. **Installation of Main C.B.A.**

Take care not to damage the Flexible Cables.

1) Connect the Flexible Cables to the connectors on the Main C.B.A, verifying that the direction of the Flexible Cables is correct. Refer to "REMOVAL/INSTALLATION OF F.P.C. FROM NON ZIF (Zero Insertion Force) CONNECTOR."
2) Make sure that the F.P.C.s are shaped as shown.

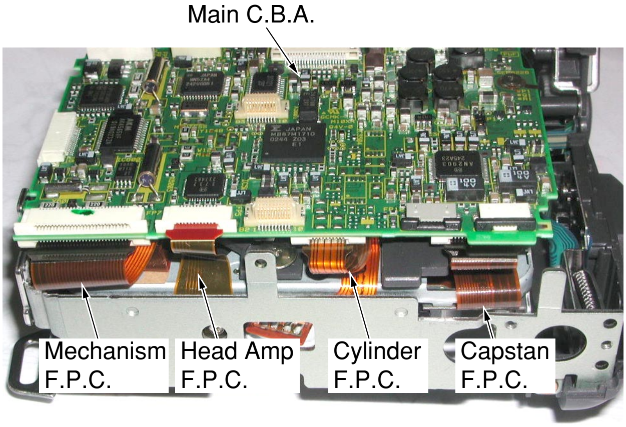

Main C.B.A.
Mechanism F.P.C.
Head Amp F.P.C.
Cylinder F.P.C.
Capstan F.P.C.

Fig. D7

9. **Replacement of Mechanism Chassis Ass'y**

When replacing the Mechanism Chassis Ass'y, be sure to perform the Envelope Output Adjustment. Refer to "ENVELOPE OUTPUT ADJUSTMENT" in MECHANICAL ADJUSTMENT.

Installation of Mechanism Chassis Ass'y

After installing the Mechanism Chassis Ass'y, confirm the F.P.C. is positioned as shown.

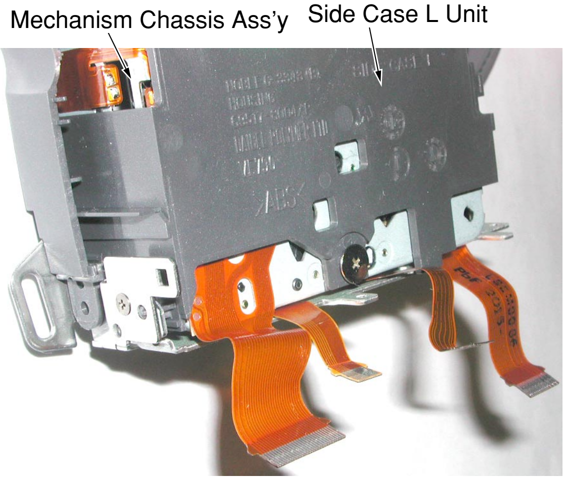

Mechanism Chassis Ass'y
Side Case L Unit

Fig. D8

10. Removal of CCD C.B.A., Filter Rubber, Optical Filter

CAUTION:

1) When removing the CCD C.B.A., take care that the Optical Filter does not fall out.
2) Take extreme caution when removing the CCD C.B.A. as it is easily damaged by static electricity. Use a Wrist Strap while removing and installing.
3) Do not touch the CCD window surface.

Installation of CCD C.B.A., Filter Rubber, Optical Filter

Install in order shown below.

1) Install the Optical Filter correctly.
   Note: Make sure that no dust gets on the Optical Filter or in the Lens Unit. Clean the Optical Filter with lens cleaning paper dampened with lens cleaner if necessary.
2) Install the Filter Rubber on the Optical Filter correctly as shown below.
   Note: Make sure that no dust gets on the Filter Rubber.
3) Install the CCD C.B.A. into the Lens Unit. Then, tighten the 2 Screws (422).
   Note: Do not touch the Lens Surface. Clean the surface with lens cleaning paper dampened with lens cleaner if necessary.

11. Installation of Zoom Motor Unit/Focus Motor Unit

Install the Zoom Motor Unit/Focus Motor Unit so that the Shaft of the Zoom Motor Unit/Focus Motor Unit is set in the Holder. Then, tighten Screws (525) in order.

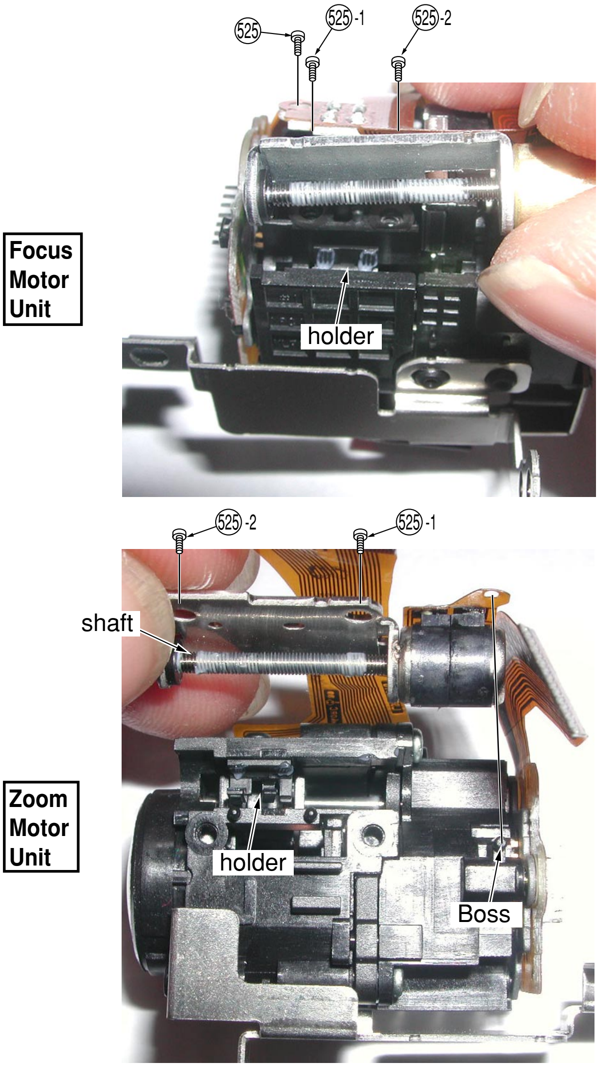


Fig. D9

12. Replacement of EVF Main Case Unit

Take care not to damage the EVF F.P.C. (in the EVF Case Unit) when removing the EVF Main Case Unit.

1) When replacing the EVF Main Case Unit, remove the Screw (523).
2) Rest Portion A of the EVF Case Unit on the Eye Sight Lever so that the Eye Sight Lever is under Portion A as shown.
3) Carefully pull off the EVF Main Case Unit while grasping both sides of the EVF Case Unit to release the Locking Tab (L-1).

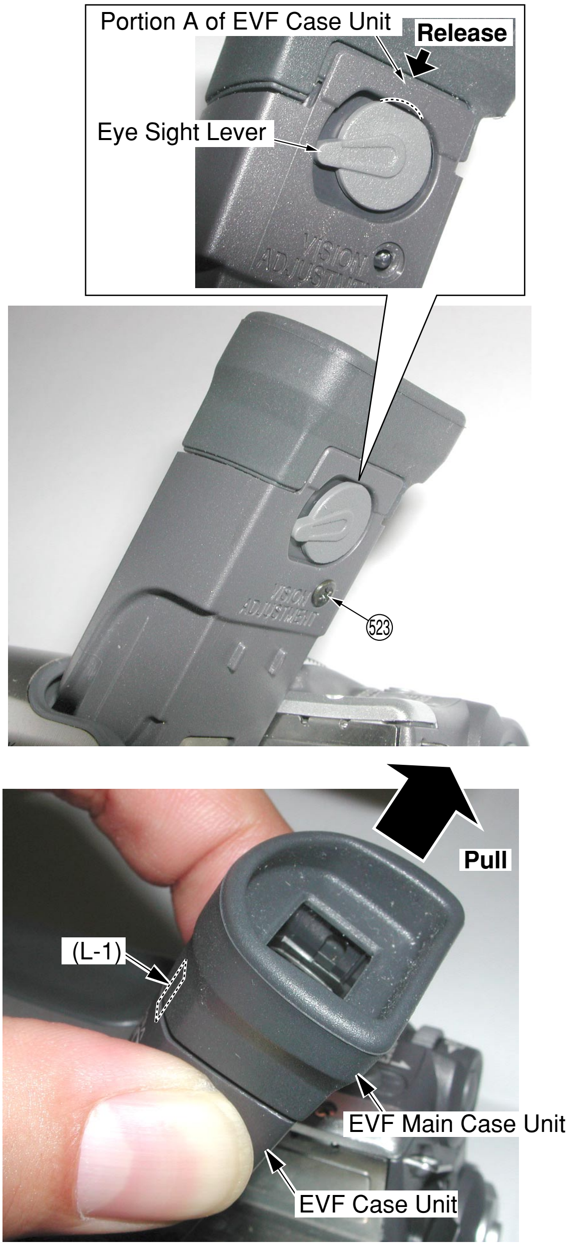

Portion A of EVF Case Unit
Release
Eye Sight Lever
523
Pull
(L-1)
EVF Main Case Unit
EVF Case Unit

Fig. D10-1

4) Disconnect the EVF F.P.C. from Connector FP951 on the EVF Main Unit.
5) Then, remove the Eye Cap.

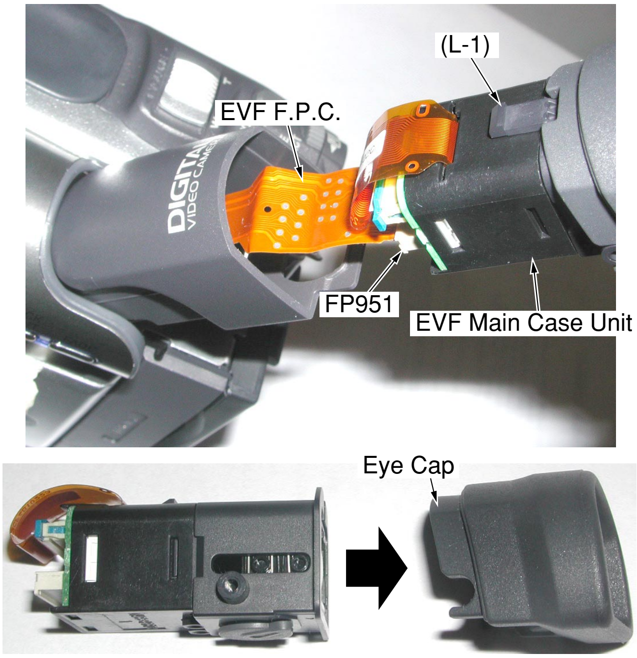

(L-1)
EVF F.P.C.
FP951
EVF Main Case Unit
Eye Cap

Fig. D10-2

13. Removal of Shaft Case Unit

1) Remove the 4 Screws (404, 405) and Light Shield Sheet (23).
2) Remove the R ESD Angle while releasing the Locking Tab (L-2) and then pull Portion A from the slot of Side Case R.

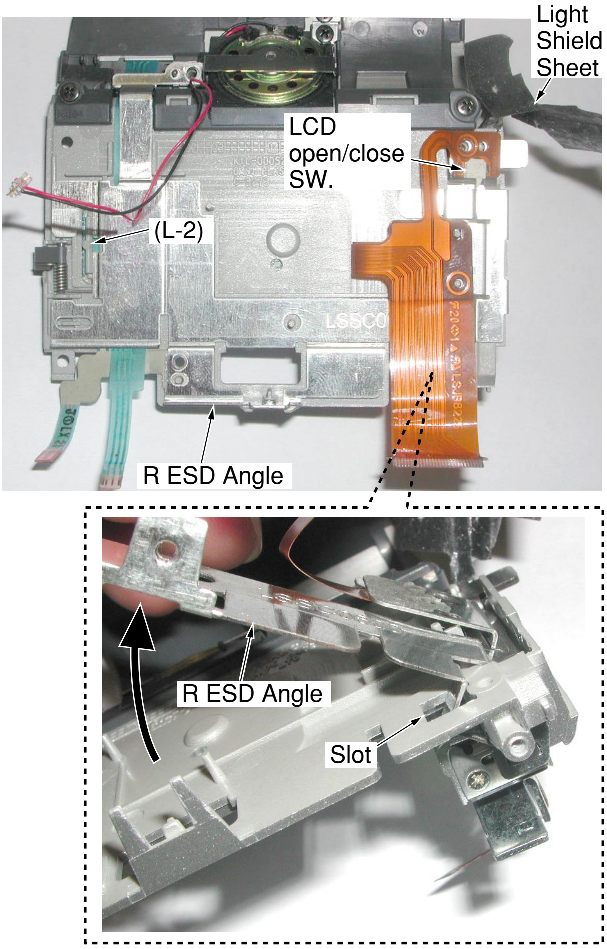

Light Shield Sheet
LCD open/close SW.
(L-2)
R ESD Angle
R ESD Angle
Slot

Fig. D11-1

3) Remove the Shaft Case Unit from the slot of Side Case R taking care not to damage the F.P.C.

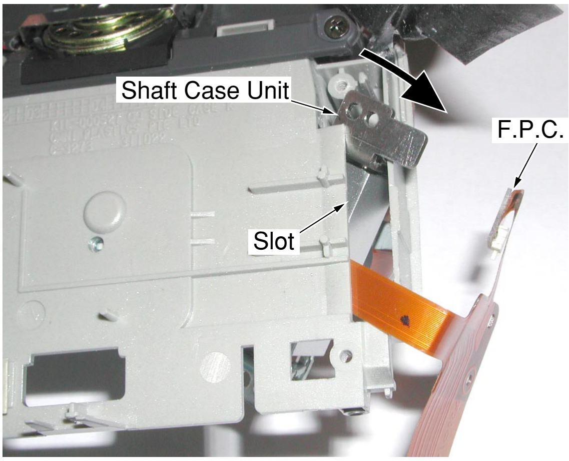
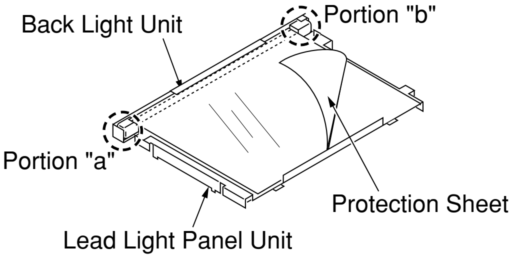

Shaft Case Unit
F.P.C.
Slot

Fig. D11-2

14. Installation of LCD Panel, Lead Light Panel Unit

a. When replacing the Lead Light Panel Unit, make sure to remove the Protection Sheet as shown below.
b. Use extreme care when handling the Lead Light Panel Unit and the LCD Panel to avoid damage, dust, and spots (especially fingerprints, etc.).
The use of clean cotton gloves is highly recommended.
c. Be careful not to apply any pressure to Portions "a" or "b" of the Back Light Unit as shown below.


Back Light Unit
Portion "b"
Portion "a"
Protection Sheet
Lead Light Panel Unit

d. After replacing the Lead Light Panel Unit, confirm that the Terminal of the Back Light Unit is soldered correctly as shown below.

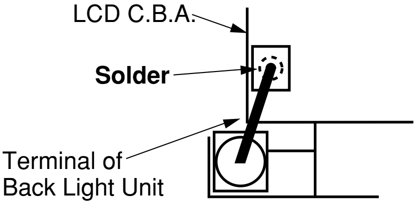

LCD C.B.A.
Solder
Terminal of Back Light Unit

Fig. D12-1

Installation of LCD Panel

When connecting the LCD Panel F.P.C. to the Connector FP8002 on LCD Main C.B.A., bend the F.P.C. as shown.

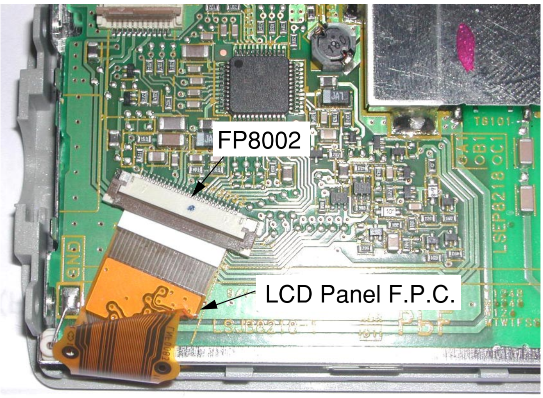
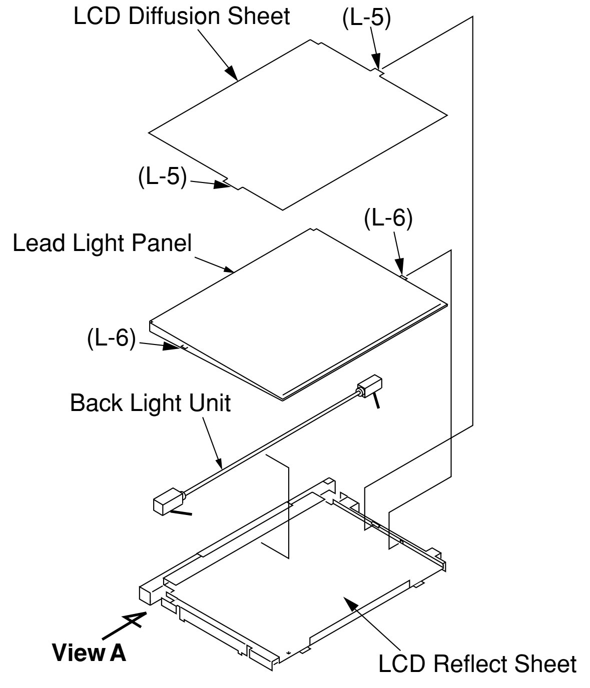

FP8002
LCD Panel F.P.C.

Fig. D12-2

15. **Installation of Back Light Unit**


LCD Diffusion Sheet
(L-5)
(L-5)
(L-6)
Lead Light Panel
(L-6)
Back Light Unit
View A
LCD Reflect Sheet

a. When installing the Back Light Unit, confirm that the Back Light Unit is positioned as shown below.
b. Use extreme caution when handling the Lead Light Panel and the LCD Diffusion Sheet to avoid damage, dust, and spots (especially fingerprints, etc.).

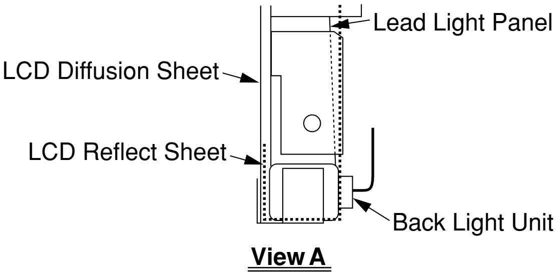
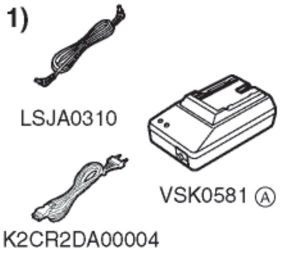

Lead Light Panel
LCD Diffusion Sheet
LCD Reflect Sheet
Back Light Unit
View A

Fig. D13

1)



2)

3)

CR2025
LSSQ0336

4)

N2QCAD000002

5)

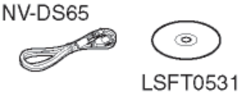
LSGQ0066
LSYF0535

6)

7)

8) NV-DS65

9) NV-DS65



Standard Accessories

Illustrated on the left are accessories supplied with the Movie Camera.

1) **AC Adaptor, DC Input Lead and AC Mains Lead (➜ 10)**
2) **Battery Pack (➜ 10)**
3) **Remote Controller and Button-Type Battery (➜ 8, 9)**
4) **Free Style Controller (➜ 8)**
5) **Lens Cap (➜ 11)**
6) **AV Cable (➜ 35, 36)**
7) **Shoulder Strap (➜ 12)**
8) **SD Memory Card (NV-DS65 only) (➜ 38)**
9) **USB Connection Kit (NV-DS65 only) (➜ 43)**

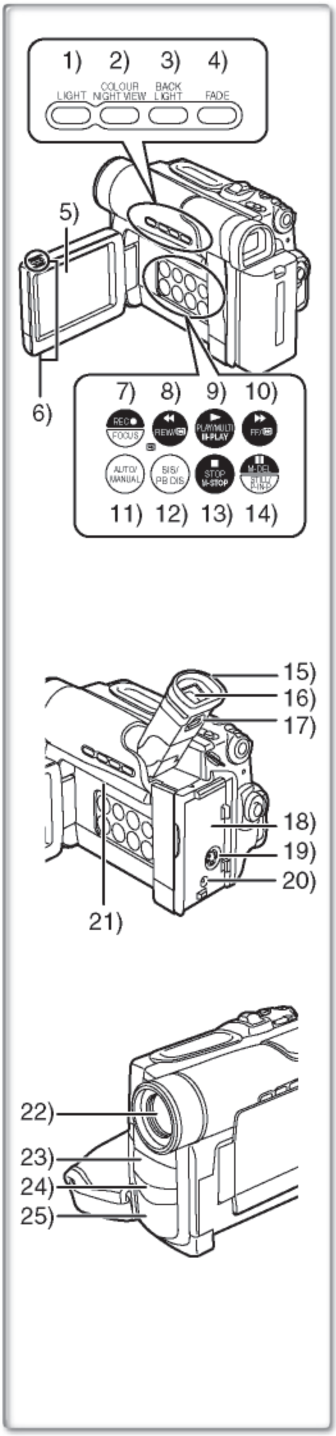
Optional Accessories

1) AC Adaptor (VW-AD9E)
2) Battery Pack (Lithium/CGR-D08S/CGR-D120/800mAh)
3) Battery Pack (Lithium/CGP-D14S/CGP-D210/1400mAh)
4) Battery Pack (Lithium/CGR-D16S/CGR-D220/1600mAh)
5) Battery Pack (Lithium/CGP-D28S/CGP-D320/2800mAh)
6) Battery Pack (Lithium/CGR-D53S/CGR-D815/5300mAh)
7) Car Battery Charger (VW-KBD2E)
8) ND Filter (VW-LND27E)
9) MC Protector (VW-LMC27E)
10) Wide Conversion Lens (VW-LW2707N2E)
11) Tele Conversion Lens (VW-LT2714N2E)
12) Stereo Microphone (VW-VMS2E)
13) Shoe Adaptor (VW-SK11E)
14) Tripod (VZ-CT55E)
15) Personal Computer Connection Kit (VW-DTA30E/VW-DTA29E) **(NV-DS60 only)**
16) DV Editing Software with DV Interface Board (VW-DTM21E)
17) DV Editing Software with DV Interface Card (VW-DTM22E)
18) DV Editing Software (VW-DTM20E)
19) DV Cable (VW-CD1E)

The following is for the NV-DS65 model only.

20) MultiMediaCard (VW-MMC8E/VW-MMC16E)
21) SD Memory Card (RP-SD008/RP-SD016/RP-SD032/RP-SD064/RP-SD128/RP-SDH256/RP-SDH512)
22) PC Card Adaptor for SD Memory Card (BN-SDABPE)
23) USB Reader Writer for SD Memory Card (BN-SDCAPE)

- Some optional accessories may not be available in some countries.


1) 2) 3) 4)
LIGHT
COLOUR NIGHT VIEW
BACK LIGHT
FADE
5)
6)
7) 8) 9) 10)
REC●
FOCUS
REW/
PLAY/MULTI
M-PLAY
FF/
AUTO/MANUAL
SIS/PB DIS
STOP
M-STOP
M-DEL
STILL/P-IN-P
11) 12) 13) 14)
15)
16)
17)
18)
19)
20)
21)
22)
23)
24)
25)

Controls and Components

1) Video Light Button [LIGHT] (➜ 19)
2) Colour Night View Button [COLOUR NIGHT VIEW] (➜ 23)
3) Backlight Button [BACK LIGHT] (➜ 23, 39)
4) Fade Button [FADE] (➜ 22)
5) LCD Monitor (➜ 13, 53)

……

- Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD Monitor screen. However, this is not a malfunction and does not affect the recorded picture.

……

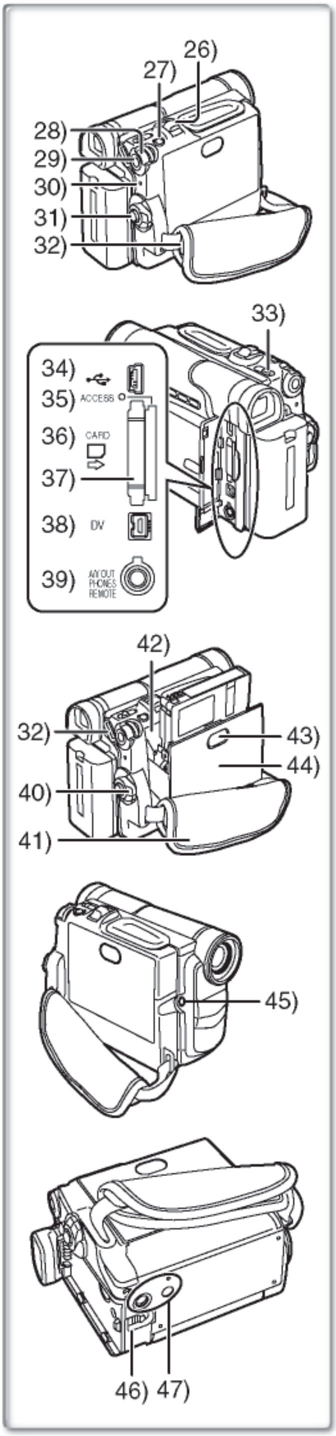
6) LCD Monitor Open Tab [OPEN ▼] (➜ 13)
7) Focus Button [FOCUS] (➜ 27)
   Recording Button [REC] (NV-DS65 only) (➜ 37)
8) Recording Check Button [⤾] (➜ 18)
   Rewind/Review Button [◀◀] (➜ 30, 31)
9) Play Button [▶] (➜ 30)
   Playback Multi Button [MULTI] (➜ 30)
   Memory Card Play Button [M-PLAY] (NV-DS65 only) (➜ 40)
10) Fast Forward/Cue Button [▶▶] (➜ 31)
11) Mode Selector Button [AUTO/MANUAL] (➜ 18, 25, 26, 27)
12) Super Image Stabilizer Button [SIS] (➜ 22)
   Playback Digital Image Stabilizer Button [PB DIS] (➜ 30)
13) Stop Button [■] (➜ 30)
   Memory Card Stop Button [M-STOP] (NV-DS65 only) (➜ 40)
14) Pause Button [❚❚] (➜ 32)
   Memory Card Data Delete Button [M-DEL] (NV-DS65 only) (➜ 42)
   Still Button [STILL] (➜ 20, 29)
   Picture in Picture Button [P-IN-P] (➜ 29)
15) Eyecup
16) Viewfinder (➜ 13, 54)

……

- Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the Viewfinder screen. However, this is not a malfunction and does not affect the recorded picture.

……

17) Eyepiece Corrector Knob (➜ 13)
18) Battery Holder
19) S-Video Output Socket [S-VIDEO] (➜ 35, 36)
20) DC Input Socket [DC/C.C. IN] (➜ 10)
21) Speaker (➜ 30)
22) Lens
23) Built-in Video Light (➜ 19)
24) Remote Control Sensor (➜ 9)
25) Microphone (built-in, stereo) (➜ 21)



26) Zoom Lever [W/T] (➔ 21)
Volume Lever [VOLUME] (➔ 30)

27) Photoshot Button [PHOTO SHOT] (➔ 20, 39)

28) Multi-Function Dial [PUSH] (➔ 14, 25, 26, 27)

29) Menu Button [MENU] (➔ 14)

30) Power Lamp [POWER] (➔ 18, 30, 39)

31) Recording Start/Stop Button (➔ 18)

32) Shoulder Strap Holders (➔ 12)

33) Cassette Eject Lever [TAPE EJECT] (➔ 12)

34) Digital Still Picture Terminal [TO PC] (NV-DS60 only) (➔ 37)
USB Socket (NV-DS65 only) (➔ 43)

35) Card Access Lamp [ACCESS] (NV-DS65 only) (➔ 38)

36) Card Slot (NV-DS65 only) (➔ 38)

37) Button Type Battery Tray (➔ 17)

38) DV Terminal (➔ 37)
- Connect this to the digital video equipment.

39) Audio-Video Output Socket [A/V OUT] (➔ 35, 36)
Headphone Socket [PHONES] (➔ 48)
Free Style Remote Controller Socket [REMOTE] (➔ 8)
- Connecting an AV Cable to this socket activates the Movie Camera's built-in speaker, but connecting a headphone, etc. deactivates it.
- When connecting the headphones with remote controller to the [PHONES] Socket, the Movie Camera may cause the mis-operation.

40) Off/On Mode Selector Switch [VCR/OFF/CAMERA/M-CARD] ([M-CARD] NV-DS65 only) (➔ 12, 18, 30, 39, 50)

41) Grip Belt (➔ 11)

42) Cassette Holder (➔ 12)

43) Cassette Cover Close Button [PUSH CLOSE] (➔ 12)

44) Cassette Compartment Cover (➔ 12)

45) Microphone Socket [EXT MIC]
- Connect with an external microphone or audio equipment. (When this socket is in use, the built-in microphone does not operate.)

46) Battery Release Lever [BATTERY RELEASE] (➔ 10)

47) Tripod Receptacle
- Used for mounting the Movie Camera on an optional tripod.

- Press each button firmly to ensure that the Movie Camera operates correctly.

1. **Important safety notice**

   Components identified by the sign ⚠ have special characteristics important for safety. When replacing any of these components. Use only the specified parts.

2. Do not use the part number shown on this drawing for ordering.
   The correct part number and part value is shown in the parts list, and may be slightly different or amended since this drawing was prepared.

3. Use only original replacement parts:
   To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.
   However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information

   ○ : Test point with no test pin.

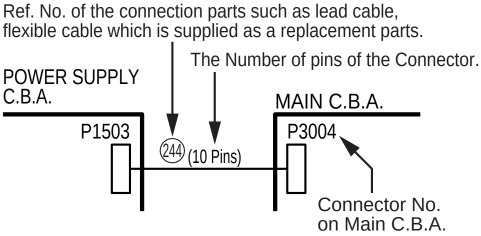
Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes
   The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

   Example:
   (6.2V)......Zener Voltage

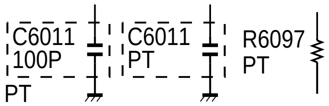
2. How to identify Connectors
   Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to,
   in other words, its counter part.
   Use the interconnection schematic diagram to find the connection between associated connectors.

   Example:
   The connections between C.B.A.s are shown below.


Ref. No. of the connection parts such as lead cable, flexible cable which is supplied as a replacement parts.
The Number of pins of the Connector.
POWER SUPPLY C.B.A.
MAIN C.B.A.
P1503
(244)
(10 Pins)
P3004
Connector No. on Main C.B.A.

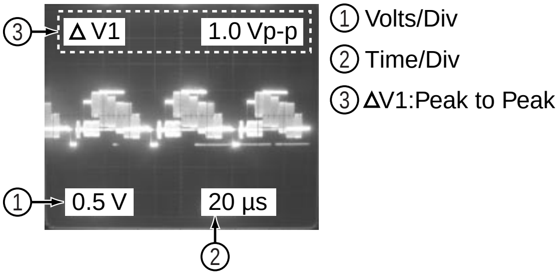
3. Parts marked "PT" are not used in any models included in this service model.

   Example:


C6011
100P
PT
C6011
PT
R6097
PT

Signal Waveform Note

How to read Signal Waveform


③
ΔV1
1.0 Vp-p
①
0.5 V
20 µs
②
① Volts/Div
② Time/Div
③ ΔV1:Peak to Peak

Voltage Chart Note

Voltage Measurement

a. Color bar signal in SP mode.
b. ---:Unmeasurable or not necessary to measure.

Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.
For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

NOTE:
Circuit Board Layout includes components which are not used.

Model No. Identification Mark

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

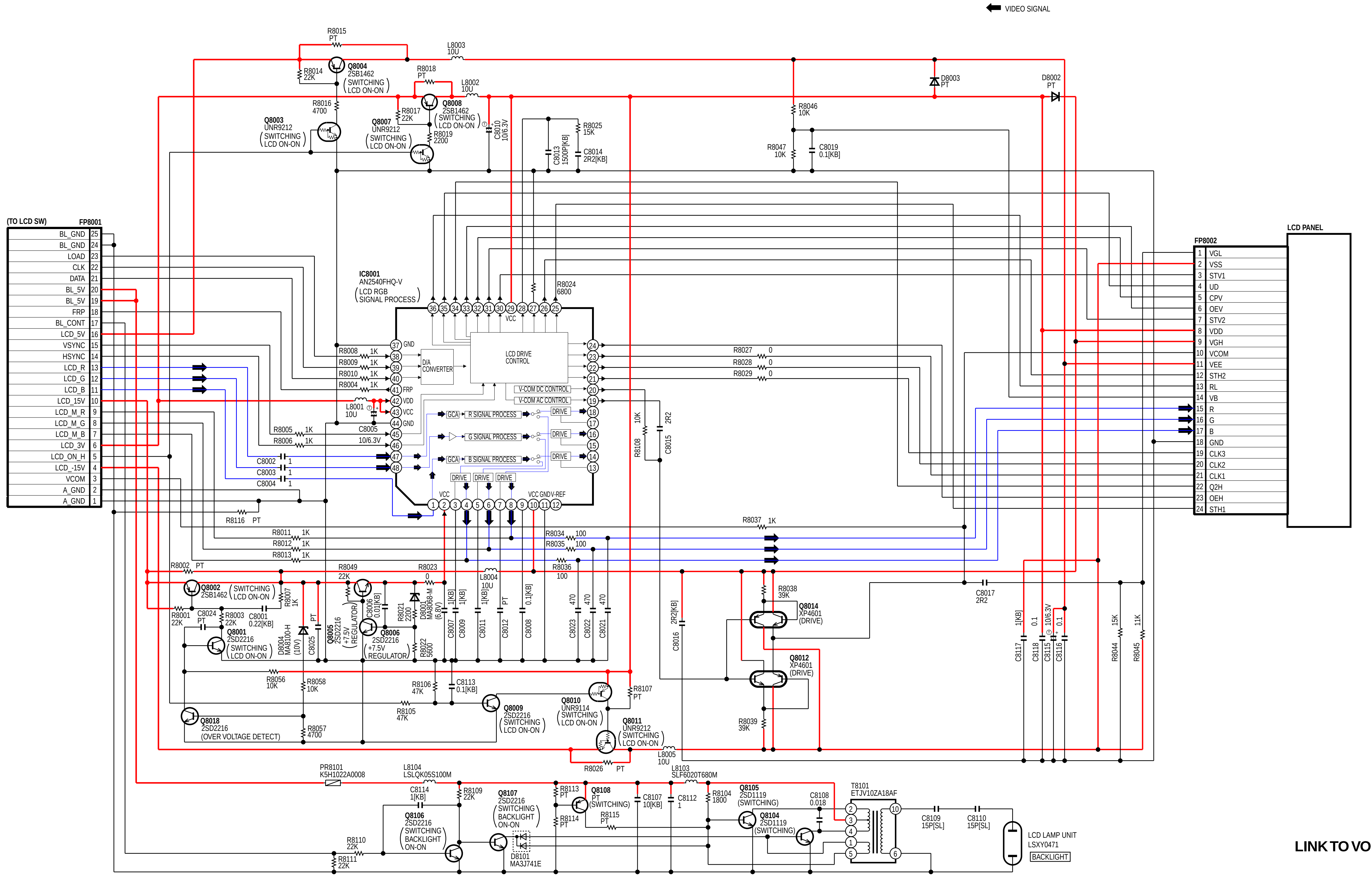
Note : Refer to item 3 of Schematic Diagram Notes for mark "PT".

LCD SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.


VIDEO SIGNAL
(TO LCD SW)
FP8001
BL_GND 25
BL_GND 24
LOAD 23
CLK 22
DATA 21
BL_5V 20
BL_5V 19
FRP 18
BL_CONT 17
LCD_5V 16
VSYNC 15
HSYNC 14
LCD_R 13
LCD_G 12
LCD_B 11
LCD_15V 10
LCD_M_R 9
LCD_M_G 8
LCD_M_B 7
LCD_3V 6
LCD_ON_H 5
LCD_-15V 4
VCOM 3
A_GND 2
A_GND 1
LCD PANEL
FP8002
1 VGL
2 VSS
3 STV1
4 UD
5 CPV
6 OEV
7 STV2
8 VDD
9 VGH
10 VCOM
11 VEE
12 STH2
13 RL
14 VB
15 R
16 G
17 B
18 GND
19 CLK3
20 CLK2
21 CLK1
22 Q2H
23 OEH
24 STH1
IC8001
AN2540FHQ-V
(LCD RGB SIGNAL PROCESS)
LCD DRIVE CONTROL
D/A CONVERTER
V-COM DC CONTROL
V-COM AC CONTROL
GCA
R SIGNAL PROCESS
G SIGNAL PROCESS
B SIGNAL PROCESS
DRIVE
VCC
GND
VDD
FRP
VCC GND V-REF
R8015 PT
R8014 22K
Q8004 2SB1462 (SWITCHING LCD ON-ON)
L8003 10U
R8018 PT
L8002 10U
R8016 4700
Q8003 UNR9212 (SWITCHING LCD ON-ON)
Q8007 UNR9212 (SWITCHING LCD ON-ON)
R8017 22K
Q8008 2SB1462 (SWITCHING LCD ON-ON)
R8019 2200
C8010 10/6.3V
C8013 1500P[KB]
R8025 15K
C8014 2R2[KB]
D8003 PT
D8002 PT
R8046 10K
R8047 10K
C8019 0.1[KB]
R8024 6800
R8008 1K
R8009 1K
R8010 1K
R8004 1K
L8001 10U
C8005 10/6.3V
R8005 1K
R8006 1K
C8002 1
C8003 1
C8004 1
R8027 0
R8028 0
R8029 0
R8108 10K
C8015 2R2
R8116 PT
R8011 1K
R8012 1K
R8013 1K
R8037 1K
R8034 100
R8035 100
R8036 100
R8002 PT
R8049 22K
R8023 0
Q8002 2SB1462 (SWITCHING LCD ON-ON)
R8001 22K
C8024 PT
R8003 22K
C8001 0.22[KB]
R8007 1K
Q8001 2SD2216 (SWITCHING LCD ON-ON)
D8004 MA8100-H (10V)
C8025 PT
Q8005 2SD2216 (+7.5V REGULATOR)
C8006 0.01[KB]
Q8006 2SD2216 (+7.5V REGULATOR)
R8021 2200
D8001 MA8068-M (6.8V)
R8022 5600
C8007 1[KB]
C8009 1[KB]
L8004 10U
C8011 1[KB]
C8012 PT
C8008 0.1[KB]
C8023 470
C8022 470
C8021 470
C8016 2R2[KB]
R8038 39K
Q8014 XP4601 (DRIVE)
Q8012 XP4601 (DRIVE)
R8039 39K
C8017 2R2
C8117 1[KB]
C8118 0.1
C8115 10/6.3V
C8116 0.1
R8044 15K
R8045 11K
R8056 10K
R8058 10K
R8106 47K
C8113 0.1[KB]
R8105 47K
Q8009 2SD2216 (SWITCHING LCD ON-ON)
Q8010 UNR9114 (SWITCHING LCD ON-ON)
R8107 PT
Q8011 UNR9212 (SWITCHING LCD ON-ON)
Q8018 2SD2216 (OVER VOLTAGE DETECT)
R8057 4700
L8005 10U
R8026 PT
PR8101 K5H1022A0008
L8104 LSLQK05S100M
L8103 SLF6020T680M
C8114 1[KB]
R8109 22K
Q8107 2SD2216 (SWITCHING BACKLIGHT ON-ON)
R8113 PT
Q8108 PT (SWITCHING)
R8114 PT
R8115 PT
C8107 10[KB]
C8112 1
R8104 1800
Q8105 2SD1119 (SWITCHING)
Q8104 2SD1119 (SWITCHING)
C8108 0.018
T8101 ETJV10ZA18AF
C8109 15P[SL]
C8110 15P[SL]
Q8106 2SD2216 (SWITCHING BACKLIGHT ON-ON)
R8110 22K
R8111 22K
D8101 MA3J741E
LCD LAMP UNIT LSXY0471
BACKLIGHT

LINK TO VOLTAGE CHART

LSJB8218
LCD SCHEMATIC DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

FRONT SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

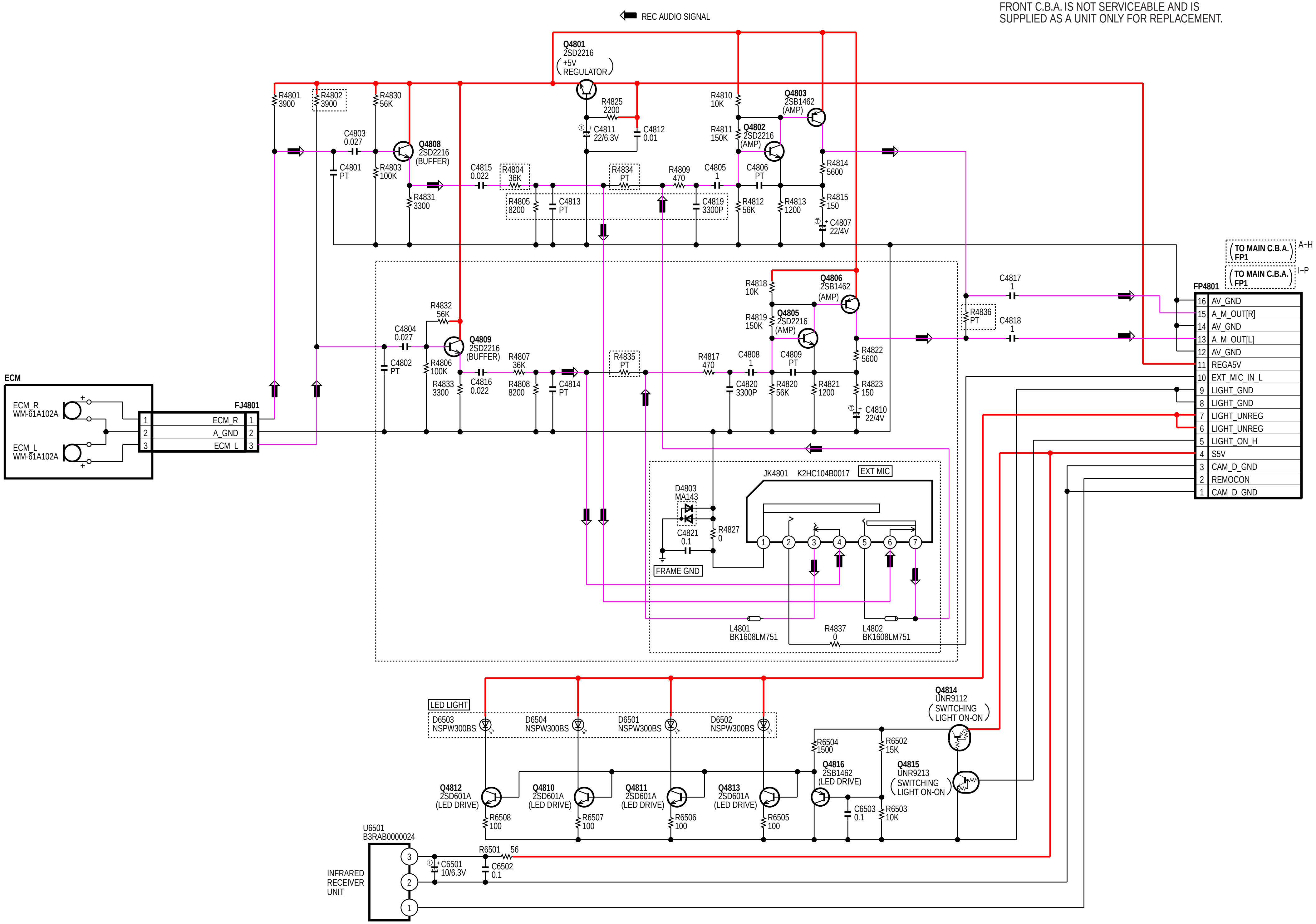
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

"FOR REFERENCE ONLY"

NOTE:
FRONT C.B.A. IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.


REC AUDIO SIGNAL
Q4801
2SD2216
(+5V REGULATOR)
R4801 3900
R4802 3900
R4830 56K
C4803 0.027
Q4808
2SD2216
(BUFFER)
C4801 PT
R4803 100K
R4831 3300
C4815 0.022
R4804 36K
R4805 8200
C4813 PT
R4825 2200
C4811 22/6.3V
C4812 0.01
R4834 PT
R4809 470
C4805 1
C4819 3300P
R4810 10K
R4811 150K
Q4802
2SD2216
(AMP)
Q4803
2SB1462
(AMP)
C4806 PT
R4812 56K
R4813 1200
R4814 5600
R4815 150
C4807 22/4V
R4818 10K
Q4806
2SB1462
(AMP)
R4819 150K
Q4805
2SD2216
(AMP)
R4832 56K
C4804 0.027
Q4809
2SD2216
(BUFFER)
C4802 PT
R4806 100K
R4833 3300
C4816 0.022
R4807 36K
R4808 8200
C4814 PT
R4835 PT
R4817 470
C4808 1
C4820 3300P
C4809 PT
R4820 56K
R4821 1200
R4822 5600
R4823 150
C4810 22/4V
C4817 1
R4836 PT
C4818 1
ECM
ECM_R WM-61A102A
ECM_L WM-61A102A
FJ4801
1 ECM_R 1
2 A_GND 2
3 ECM_L 3
JK4801 K2HC104B0017
EXT MIC
D4803 MA143
C4821 0.1
R4827 0
FRAME GND
1 2 3 4 5 6 7
L4801 BK1608LM751
R4837 0
L4802 BK1608LM751
TO MAIN C.B.A. FP1 A~H
TO MAIN C.B.A. FP1 I~P
FP4801
16 AV_GND
15 A_M_OUT[R]
14 AV_GND
13 A_M_OUT[L]
12 AV_GND
11 REGA5V
10 EXT_MIC_IN_L
9 LIGHT_GND
8 LIGHT_GND
7 LIGHT_UNREG
6 LIGHT_UNREG
5 LIGHT_ON_H
4 S5V
3 CAM_D_GND
2 REMOCON
1 CAM_D_GND
LED LIGHT
D6503 NSPW300BS
D6504 NSPW300BS
D6501 NSPW300BS
D6502 NSPW300BS
Q4814
UNR9112
(SWITCHING LIGHT ON-ON)
R6504 1500
R6502 15K
Q4816
2SB1462
(LED DRIVE)
Q4815
UNR9213
(SWITCHING LIGHT ON-ON)
C6503 0.1
R6503 10K
Q4812
2SD601A
(LED DRIVE)
Q4810
2SD601A
(LED DRIVE)
Q4811
2SD601A
(LED DRIVE)
Q4813
2SD601A
(LED DRIVE)
R6508 100
R6507 100
R6506 100
R6505 100
U6501
B3RAB0000024
INFRARED RECEIVER UNIT
R6501 56
C6501 10/6.3V
C6502 0.1
3 2 1

FRONT SCHEMATIC DIAGRAM
NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S

REAR SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts,
be sure to use the part number listed in the parts list.
Do not use the part number on this diagram.

NOTE:
PARTS MARKED "PT" ARE NOT USED.

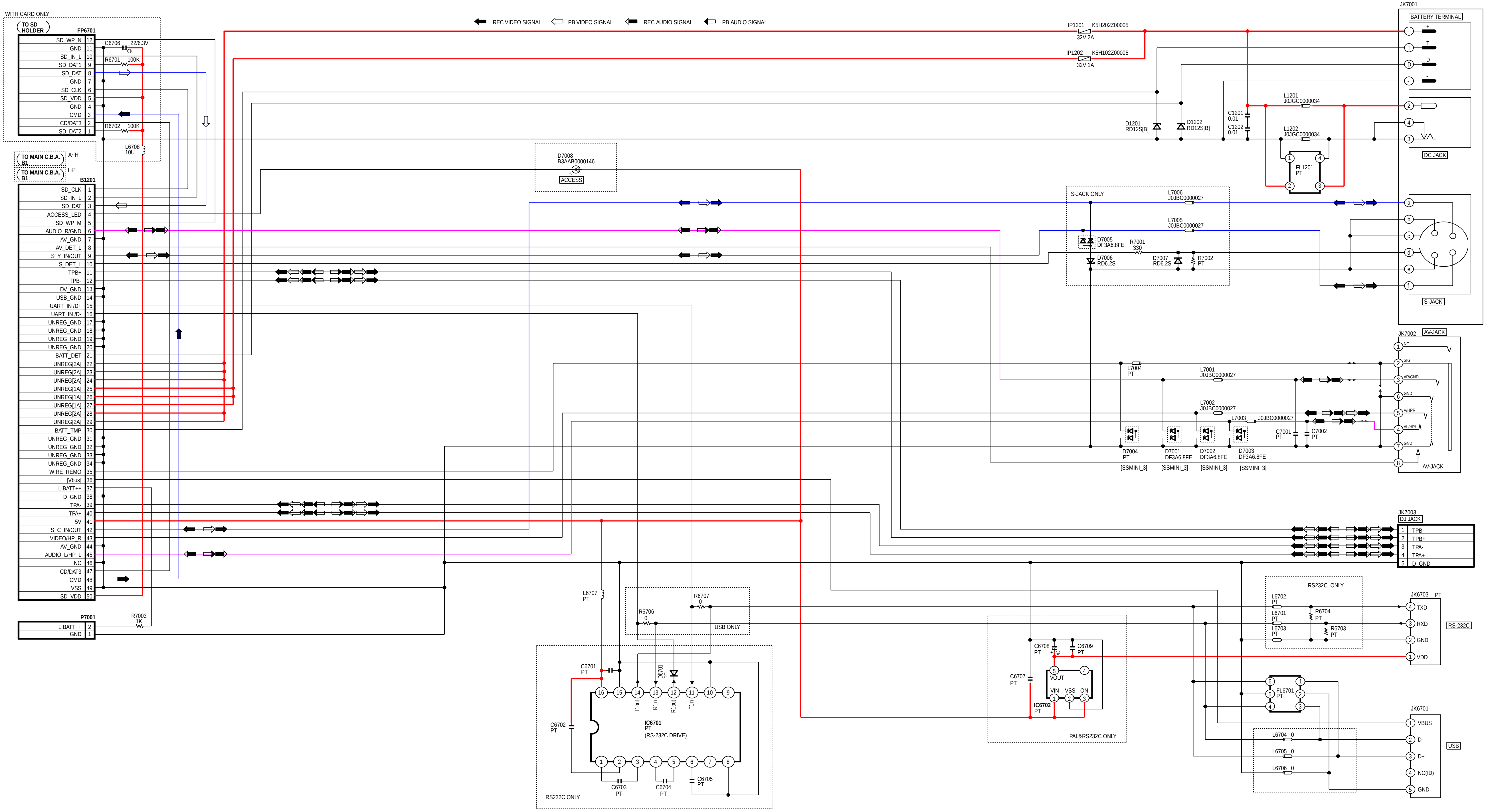
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
NV-DS60EG-S	A	NV-DS65EG-S	I
NV-DS60EGE-S	B	NV-DS65EGE-S	J
NV-DS60EGM-S	C	NV-DS65EGM-S	K
NV-DS60B-S	D	NV-DS65B-S	L
NV-DS60EN-S	E	NV-DS65EN-S	M
NV-DS60ENT-S	F	NV-DS65ENT-S	N
NV-DS60ENC-S	G	NV-DS65ENC-S	O
NV-DS60A-S	H	NV-DS65A-S	P
		Not Used	PT

“FOR REFERENCE ONLY”

NOTE:
REAR C.B.A. IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



REC VIDEO SIGNAL
PB VIDEO SIGNAL
REC AUDIO SIGNAL
PB AUDIO SIGNAL
WITH CARD ONLY
TO SD HOLDER
FP6701
SD_WP_N
GND
SD_IN_L
SD_DAT1
SD_DAT
SD_CLK
SD_VDD
CMD
CD/DAT3
SD_DAT2
C6706 22/6.3V
R6701 100K
R6702 100K
L6708 10U
TO MAIN C.B.A. B1 A~H
TO MAIN C.B.A. B1 I~P
B1201
SD_CLK
SD_IN_L
SD_DAT
ACCESS_LED
SD_WP_M
AUDIO_R/GND
AV_GND
AV_DET_L
S_Y_IN/OUT
S_DET_L
TPB+
TPB-
DV_GND
USB_GND
UART_IN/D+
UART_IN/D-
UNREG_GND
BATT_DET
UNREG[2A]
UNREG[1A]
BATT_TMP
WIRE_REMO
[Vbus]
LIBATT++
D_GND
TPA-
TPA+
5V
S_C_IN/OUT
VIDEO/HP_R
AUDIO_L/HP_L
NC
VSS
SD_VDD
P7001
LIBATT++
GND
R7003 1K
D7008 B3AAB0000146
ACCESS
IP1201 K5H202Z00005 32V 2A
IP1202 K5H102Z00005 32V 1A
JK7001
BATTERY TERMINAL
D1201 RD12S[B]
D1202 RD12S[B]
C1201 0.01
C1202 0.01
L1201 J0JGC0000034
L1202 J0JGC0000034
FL1201 PT
DC JACK
S-JACK ONLY
L7006 J0JBC0000027
L7005 J0JBC0000027
D7005 DF3A6.8FE
R7001 330
D7006 RD6.2S
D7007 RD6.2S
R7002 PT
S-JACK
JK7002 AV-JACK
NC
SIG
AR/GND
GND
V/HPR
AL/HPL
L7004 PT
L7001 J0JBC0000027
L7002 J0JBC0000027
L7003 J0JBC0000027
C7001 PT
C7002 PT
D7004 PT
D7001 DF3A6.8FE
D7002 DF3A6.8FE
D7003 DF3A6.8FE
[SSMINI_3]
AV-JACK
JK7003 DJ JACK
TPB-
TPB+
TPA-
TPA+
D_GND
L6707 PT
R6706 0
R6707 0
USB ONLY
C6701 PT
D6701 PT
T1out
R1in
R1out
T1in
C6702 PT
IC6701 PT (RS-232C DRIVE)
C6703 PT
C6704 PT
C6705 PT
RS232C ONLY
C6708 PT
C6709 PT
C6707 PT
VOUT
VIN VSS ON
IC6702 PT
PAL&RS232C ONLY
RS232C ONLY
L6702 PT
L6701 PT
L6703 PT
R6704 PT
R6703 PT
JK6703 PT
TXD
RXD
GND
VDD
RS-232C
FL6701 PT
JK6701
VBUS
D-
D+
NC(ID)
GND
L6704 0
L6705 0
L6706 0
USB

REAR SCHEMATIC DIAGRAM

NV-DS60EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S
NV-DS65EG-S/EGM-S/B-S/EGE-S/EN-S/ENT-S/ENC-S/A-S